ORIGINAL

BEFORE THE ARIZONA CORPORATION COM

RECEIVED

2016 JUN -3 P 1:06

AZ CORP COMMISSION
DOCKET CONTROL

COMMISSIONERS:

DOUG LITTLE, Chairman
BOB STUMP
BOB BURNS
TOM FORESE
ANDY TOBIN

IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR APPROVAL OF ITS 2016 RENEWABLE ENERGY STANDARD AND TARIFF IMPLEMENTATION PLAN.	DOCKET NO. E-01933A-15-0239
IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR THE ESTABLISHMENT OF JUST AND REASONABLE RATES AND CHARGES DESIGNED TO REALIZE A REASONABLE RATE OF RETURN ON THE FAIR VALUE OF THE PROPERTIES OF TUCSON ELECTRIC POWER COMPANY DEVOTED TO ITS OPERATIONS THROUGHOUT THE STATE OF ARIZONA AND FOR RELATED APPROVALS.	DOCKET NO. E-01933A-15-0322

Arizona Corporation Commission
DOCKETED
JUN 3 2016
DOCKETED BY

NOTICE OF FILING DIRECT TESTIMONY OF MICHAEL P. GORMAN

The United States Department of Defense and all other Federal Executive Agencies ("DoD/FEA"), through undersigned counsel, hereby files the Direct Testimony of Michael P. Gorman.

Dated this 2nd day of June, 2016

Respectfully submitted,

Kyle J. Smith

General Attorney
Regulatory Law Office (JALS-RL/IP)
Office of the Judge Advocate General
U.S. Army Legal Services Agency
9275 Gunston Road
Fort Belvoir, VA 22060-5546
For
The United States Department of Defense
And
All Other Federal Executive Agencies

CERTIFICATE OF SERVICE

The original and thirteen (13) copies of the foregoing is being transmitted Federal Express overnight delivery this 2nd day of June, 2016, to be received and filed on the 3rd day of June, 2016 with:

Docket Control Division
Arizona Corporation Commission
1200 West Washington Street
Phoenix, Arizona 85007

Copies of the foregoing were also transmitted via regular U.S. Mail or electronic mail to all parties on the service list on this 2nd day of June, 2016.

Kyle J Smith

BEFORE THE

ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR THE ESTABLISHMENT OF JUST AND REASONABLE RATES AND CHARGES DESIGNED TO REALIZE A REASONABLE RATE OF RETURN ON THE FAIR VALUE OF THE PROPERTIES OF TUCSON ELECTRIC POWER COMPANY DEVOTED TO ITS OPERATIONS THROUGHOUT THE STATE OF ARIZONA AND FOR RELATED APPROVALS	**DOCKET NO. E-01933A-15-0322**

Direct Testimony and Exhibits of

Michael P. Gorman

On behalf of

United States Department of Defense and all other Federal Executive Agencies

June 3, 2016

BRUBAKER & ASSOCIATES, INC.

Project 10255

BEFORE THE

ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR THE ESTABLISHMENT OF JUST AND REASONABLE RATES AND CHARGES DESIGNED TO REALIZE A REASONABLE RATE OF RETURN ON THE FAIR VALUE OF THE PROPERTIES OF TUCSON ELECTRIC POWER COMPANY DEVOTED TO ITS OPERATIONS THROUGHOUT THE STATE OF ARIZONA AND FOR RELATED APPROVALS	**DOCKET NO. E-01933A-15-0322**

Table of Contents to the Direct Testimony of Michael P. Gorman

BEFORE THE

ARIZONA CORPORATION COMMISSION

IN THE MATTER OF THE APPLICATION OF TUCSON ELECTRIC POWER COMPANY FOR THE ESTABLISHMENT OF JUST AND REASONABLE RATES AND CHARGES DESIGNED TO REALIZE A REASONABLE RATE OF RETURN ON THE FAIR VALUE OF THE PROPERTIES OF TUCSON ELECTRIC POWER COMPANY DEVOTED TO ITS OPERATIONS THROUGHOUT THE STATE OF ARIZONA AND FOR RELATED APPROVALS	**DOCKET NO. E-01933A-15-0322**

Direct Testimony of Michael P. Gorman

I. INTRODUCTION AND SUMMARY

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q WHAT IS YOUR OCCUPATION?

A I am a consultant in the field of public utility regulation and a Managing Principal of Brubaker & Associates, Inc., energy, economic and regulatory consultants.

Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A This information is included in Appendix A to my testimony.

Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A I am testifying on behalf of the United States Department of Defense and all other Federal Executive Agencies ("DoD/FEA"). DoD/FEA is a large customer of Tucson Electric Power Company ("TEP" or "Company) and maintains military installations in Arizona, including, but not limited to, Fort Huachuca and Davis-Monthan Air Force Base.

Q PLEASE DESCRIBE THE ISSUES YOU WILL ADDRESS IN THIS TESTIMONY.

A I recommend an adjustment to TEP's proposed Required Operating Income ("ROI"), which is the product of a fair rate of return and rate base. I recommend a fair ROI based on an overall rate of return on original cost rate base ("ROR-OCRB") and Fair Value Rate Base ("ROR-FVRB") that is fair, just and reasonable. I will also respond to the Company's requested ROI and, specifically the reasonableness of TEP's proposed ROR-OCRB and ROR-FVRB.

I.A. Summary

Q PLEASE SUMMARIZE YOUR PROPOSED ADJUSTMENT TO TEP'S REQUESTED ROI.

A Based on my assessment of a fair ROR-OCRB and on ROR-FVRB, I recommend an ROI of $145.7 million as developed on my Exhibit MPG-1. This ROI is $20.2 million lower than TEP's requested ROI of $165.9 million as presented on Schedule A-1. To account for my recommended capital structure, I increased the Adjusted Operating Income at present rates by approximately $467 thousand due to the lowered interest expense as a result of the increased debt ratio. Based on my adjustments, the

reduced level of operating income will lower the Company's claimed revenue requirement by $33.5 million.

As shown on my Exhibit MPG-1, my proposed ROI is based on an ROR-OCRB of 6.74%, and an ROR-FVRB of 5.0%.

However, and as noted later in this testimony, and accepting the Company's methodology because I understand it to be reasonably consistent with previous Commission precedent in establishing a revenue requirement based on a Fair Value Rate Base, this methodology includes a fair value increment to the ROR-OCRB. I request the Commission to reconsider adding an increment to the fair ROR-OCRB because I do not believe one is necessary to fairly compensate the Company, or to ensure TEP's financial integrity and access to capital are preserved.

Q PLEASE DESCRIBE YOUR FINDINGS CONCERNING A FAIR ROR-OCRB.

A I recommend an overall ROR-OCRB of 6.74%, as shown on Exhibit MPG-2. My ROR-OCRB is based on a return on common equity of 9.3%, which is the midpoint of my recommended range of 8.9% to 9.7%, and TEP's actual test-year-end capital structure which includes a 48.69% common equity weight of total capital.

My recommended ROR-OCRB is sufficient to support TEP's ability to maintain its financial integrity, to attract capital under reasonable terms, and is commensurate with returns that investors could earn were they to invest in other enterprises of comparable risk.

Q DO YOU RESPOND TO TEP'S PROPOSED ROR-OCRB?

A Yes. I will also respond to TEP witness Ms. Ann E. Bulkley's recommended ROR-OCRB of 7.34%, which includes a return on common equity of 10.35%, and a capital

structure that contains more common equity than TEP's actual test-year-end capital structure.

Q PLEASE DESCRIBE YOUR RECOMMENDATION ON AN ROR-FVRB.

A I have revised the Company's fair value rate of return recommendation based on my ROR-OCRB, and an update to the fair value increment. These revisions to the Company's proposed ROR-FVRB results in a fair ROR-FVRB of 5.0%.

While I update the Company's fair value rate of return estimate, I also describe why I believe that the use of a fair value methodology should not produce an ROI for TEP that is substantially different from the ROI measured from a fair ROR-OCRB. Using a fair value and original cost methodology are two methodologies of estimating a fair ROI entitlement for the utility. I do not agree with TEP's characterization that the fair value methodology should be used to add an increment above the ROI that represents a fair ROR-OCRB using a fair value methodology.

Q WILL YOU COMMENT ON THE REASONABLENESS OF TEP'S REQUESTED ROR-FVRB?

A Yes. TEP is requesting an ROR-FVRB of 5.69%.[1] This ROR-FVRB is overstated due to the use of an overstated fair return on common equity on Reconstruction Cost New, Depreciated ("RCND"), and contains a fair value increment that does not accurately reflect current market data indicating the current market risk-free rate. For these reasons, I recommend the Company's ROR-FVRB be rejected.

[1]Direct Testimony of Ann E. Bulkley at 9.

II. INVESTMENT RISK

II.A. Regulated Utility Industry Market Outlook

Q PLEASE DESCRIBE THE CREDIT RATING OUTLOOK FOR REGULATED UTILITIES.

A Regulated utilities' credit ratings have improved over the last few years and the outlook has been labeled "Stable" by credit rating agencies. Credit analysts have also observed that utilities have strong access to capital at attractive pricing (i.e., low capital costs), which has supported very large capital programs.

Standard & Poor's ("S&P") recently published a report titled "The Outlook For U.S. Regulated Utilities Remains Stable On Increasing Capital Spending And Robust Financial Performance." (Emphasis added). In that report, S&P noted the following:

> **Ratings Outlook.** Stable with a slight bias toward the negative. Utilities in the U.S. continue to enjoy a confluence of financial, economic, and regulatory environments that are tailor-made for supporting credit quality. Low interest rates, modest economic growth, and relatively stable commodity costs make for little pressure on rates and therefore on the sunny disposition of regulators.
>
> • **Credit Metrics.** We see credit metrics remaining within historic norms for the industry as a whole and do not project overall financial performance that would affect the industry's creditworthiness.
>
> • **Industry Trends.** Taking advantage of the favorable market conditions, utilities have been maintaining aggressive capital spending programs to bolster system safety and reliability, as well as technological advances to make the systems "smarter." The elevated spending has not led to large rate increases, but if macro conditions reverse and lead to rising costs that command higher rates, we would expect utilities to throttle back on spending to manage regulatory risk. [2]

Similarly, Fitch states:

> **Stable Financial Performance:** The stable financial performance of Utilities, Power & Gas (UPG) issuers continues to support a sound credit profile for the sector, with 93% of the UPG portfolio carrying investment-grade ratings as of June 30, 2015, including 65% in the

[2] *Standard & Poor's RatingsDirect*: "Corporate Industry credit Research: Industry Top Trends 2016, Utilities," December 9, 2015, at 22, emphasis added.

'BBB' rating category. Second-quarter 2015 LTM [Long-Term Maturity] leverage metrics remained relatively unchanged year over year (YOY) while interest coverage metrics modestly improved. Fitch Ratings expects this trend to broadly sustain for the remainder of 2015, driven by positive recurring factors.

Low Debt-Funded Costs: The sustained low interest rate environment has allowed UPG companies to refinance high-coupon legacy debt with lower coupon new debt. Gross interest expense on an absolute value represented approximately 4.6% of total adjusted debt as of June 30, 2015, a decline of about 150 bps from the 6.1% recorded in the midst of the recession. Fitch believes a rise in interest rates would largely be neutral to credit quality, as issuers have generally built enough headroom in coverage metrics to withstand higher financing costs.

Capex Moderately Declining: Fitch expects the capex/depreciation ratio to be at the lower end of its five-year historical range of 2.0x–2.5x in the near term, reflecting a moderate decline in projected capex from the 2011–2014 highs. The capex depreciation ratio was relatively flat YOY at about 2.4x. Capex targets investments toward base infrastructure upgrades, utility-scale renewables and transmission investments.

* * *

Key credit metrics for IUCs [investor-owned utility companies] remained relatively stable YOY and continue to support the sound credit profiles and Stable Outlooks characteristic of the sector. EBITDAR [Earnings Before Interest, Taxes, Depreciation, Amortization and Rent] and FFO [Funds From Operations] coverage ratios were 5.6x and 5.9x, respectively, for the LTM ended second-quarter 2015, while adjusted debt/EDITDAR and FFO-adjusted leverage were 3.5x and 3.4x, respectively.[3]

Moody's recent comments on the U.S. Utility Sector state as follows:

Our outlook for the US regulated utilities industry is stable. This outlook reflects our expectations for fundamental business conditions in the industry over the next 12 to 18 months.

» **The credit-supportive regulatory environment is the main reason for our stable outlook.** We expect that the relationship between regulators and utilities in 2016 will remain credit-supportive, enabling utilities to recover costs in a timely manner and maintain stable cash flows.

[3] *Fitch Ratings*: "U.S. Utilities, Power & Gas Data comparator," September 21, 2015, at 1 and 7, emphasis added.

» **We estimate that the ratio of cash flow from operations (CFO) to debt will hold steady at about 21%, on average for the industry, over the next 12 to 18 months.** The use of timely cost-recovery mechanisms and continued expense management will help utilities offset a lack of growth in electricity demand and lower allowed returns on equity, enabling financial metrics to remain stable. Tax benefits tied to the expected extension of bonus depreciation will also support CFO-to-debt ratios.

* * *

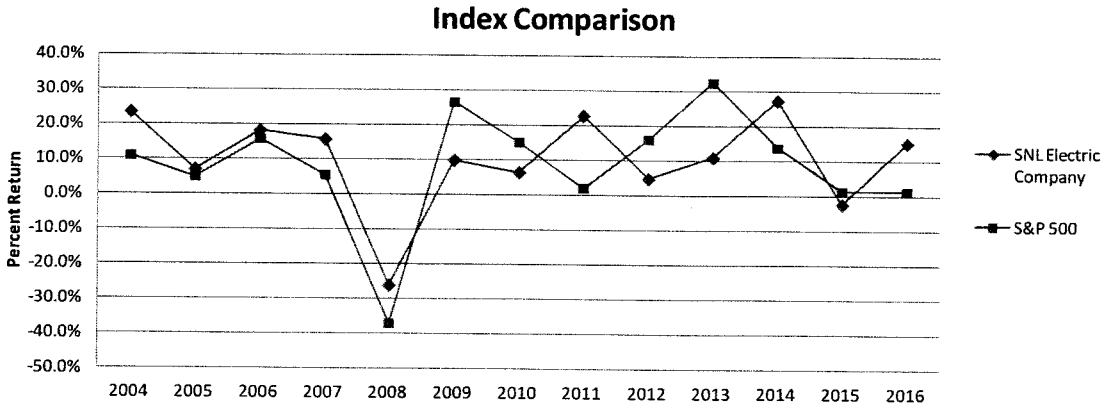
» **Utilities are increasingly using holding company leverage to drive returns, a credit negative.** Although not a driver of our outlook, utilities are using leverage at the holding company level to invest in other businesses, make acquisitions and earn higher returns on equity, which could have negative implications across the whole family. [4]

Q PLEASE DESCRIBE UTILITY STOCK PRICE PERFORMANCE OVER THE LAST SEVERAL YEARS.

A As shown in the graph below, SNL Financial has recorded utility stock price performance compared to the market. The industry's stock performance data from 2004 through March 2016 shows that the SNL Electric Company Index has outperformed the market in downturns and trailed the market during recovery. This relatively stable price performance for utilities supports my conclusion that utility stock investments are regarded by market participants as a moderate- to low-risk investment.

[4] *Moody's Investors Service*: "2016 Outlook – US Regulated Utilities: Credit-Supportive Regulatory Environment Drives Stable Outlook," November 6, 2015, at 1, emphasis added.

FIGURE 1



Source: SNL Financial, data through March 31, 2016.

Q HAVE ELECTRIC UTILITY INDUSTRY TRADE ORGANIZATIONS COMMENTED ON ELECTRIC UTILITY STOCK PRICE PERFORMANCE?

A Yes. In its 4th Quarter 2015 Financial Update, The Edison Electric Institute ("EEI") stated the following concerning the EEI Electric Utility Stock Index ("EEI Index"):

> EEI Index returns during 2015 embodied the larger pattern seen in Table I since the 2008/2009 financial crisis, as industry business models have migrated to an increasingly regulated emphasis. The industry has generated consistent positive returns but has lagged the broader markets when markets post strong gains, which in turn have been sparked both by slow but steady U.S. economic growth and corporate profit gains and by the willingness of the Federal Reserve to bolster markets with historically unprecedented monetary support in the form of three rounds of quantitative easing and near-zero short-term interest rates. While the Fed did raise short-term rates in December 2015 for the first time since 2006 (from zero to a range of 0.25% to 0.50%), this hardly effects longer-term yields, which remain at historically low levels and are influenced more by the level of inflation and economic strength than by the Fed's short-term rate policy.

* * *

Regulated Fundamentals Remain Stable

The rate stability offered by state regulation and the ability to recover rising capital spending in rate base shield regulated utilities from the

> volatility in the competitive power arena and turn the growth of renewable generation (and the resulting need for new and upgraded transmission lines) into a rate base growth opportunity for many industry players.
>
> * * *
>
> In the shorter-term, analysts continue to see opportunity for 4-6% earnings growth for regulated utilities in general along with prospects for slightly rising dividends (with a dividend yield now at about 4% for the industry overall). That formula has served utility investors quite well in recent years, delivering long-term returns equivalent to those of the broad markets but with much lower volatility. Provided state regulation remains fair and constructive in an effort to address the interests of ratepayers and investors, it would appear that the industry can continue to deliver success for all stakeholders, even in an environment of flat demand and considerable technological change.[5]

Q WHAT ARE THE IMPORTANT TAKEAWAY POINTS FROM THIS ASSESSMENT OF UTILITY INDUSTRY CREDIT AND INVESTMENT RISK OUTLOOKS?

A Credit rating agencies consider the regulated utility industry to be Stable and believe investors will continue to provide an abundance of low-cost capital to support utilities' large capital programs at attractive costs and terms. All of this reinforces my belief that utility investments are generally regarded as safe-haven or low-risk investments, and the market continues to embrace and demand low-risk investments such as utility securities. The ongoing demand for low-risk investments can reasonably be expected to continue to provide attractive low-cost capital for regulated utilities.

[5] *EEI Q4 2015 Financial Update*: "Stock Performance" at 4 and 6, emphasis added.

II.B. TEP Investment Risk

Q PLEASE DESCRIBE THE MARKET'S ASSESSMENT OF THE INVESTMENT RISK OF TEP.

A The market's assessment of TEP's investment risk is described by credit rating analysts' reports. TEP's current corporate bond ratings from S&P and Moody's are BBB+ and A3, respectively. Recently, S&P revised TEP's outlook from "Stable" to "Negative," which reflects TEP's ultimate parent's decision to acquire ITC Holdings, Inc. and finance the transaction primarily with debt. Specifically, S&P states:

> **Rating Action**
>
> On Feb. 10, 2016, Standard & Poor's Ratings Services affirmed its ratings on Tucson Electric Power Co. (TEP), including the 'BBB+' issuer credit rating and 'BBB+' senior unsecured debt rating, and revised the outlook to negative from stable.
>
> **Rationale**
>
> The negative outlook reflects Fortis' agreement to acquire ITC Holdings Corp. and that Fortis' consolidated financial measures could consistently weaken from current levels, reflecting funds from operations (FFO)-to-debt of below 10%.
>
> We base our 'BBB+' issuer credit rating on TEP on our assessments of its strong business risk profile and significant financial risk profile.
>
> TEP's strong business risk profile reflects its lower-risk regulated electric utility operation, offset by its highly volatile profitability compared with the regulated utility industry average. TEP serves more than 415,000 customers in southeastern Arizona and about 75% of its electricity comes from burning coal. TEP accounts for about 80% of parent UNS Energy Corp. based on our forward view of earnings, revenues, and assets. UNS's other businesses include regulated UNS Electric Inc. and UNS Gas Inc. that serve about 250,000 customers.
>
> Although we have historically viewed regulation in Arizona as challenging, recent regulatory outcomes have been more supportive, such as the approval of partial decoupling, higher fixed cost recovery, an environmental compliance adjustor, and forward-looking pass-through adjustment clauses for items such as purchased power and fuel.

* * *

We assess TEP's financial risk profile as significant, using our medial volatility table. The use of that table reflects the company's lower-risk regulated utility business model that is offset by the higher operating risk of regulated generation.

Under our base-case scenario, we expect that TEP's core stand-alone financial measures will continue to remain in the middle of the range for the significant financial risk profile category. Our key assumptions include modest sales growth despite rising energy efficiency and distributed generation, higher capital spending for new generation, and necessary capital spending to meet environmental and renewable standards. Specifically, we expect FFO to debt of about 17%.

* * *

Outlook

The negative outlook reflects the possibility that we could downgrade Fortis by up to one notch on the ITC acquisition. This reflects execution and integration risks, as well as the probability that consolidated financial measures could weaken because of increased consolidated debt from the acquisition's financing.[6]

Similarly, Fitch states the following:

Key Rating Drivers

Acquisition by Fortis: In the third quarter of 2014 Fortis Inc., Canada's largest investor-owned gas and electric distribution utility, acquired UNS Energy Corp. (UNS), the ultimate parent company of Tucson Electric Power Co. (TEP) for approximately $4.5 billion, including the assumption of approximately $2 billion of debt. TEP's ratings reflect the utility's improved access to capital due to Fortis' financial strength and the expectation that Fortis will support TEP's growth objectives and provide appropriate financing support as needed.

Solid Credit Metrics: For the LTM period ending March 31, 2015, TEP's EBITDAR coverage ratio trended flat at 5.3x as compared with 5.2x for 2014. Debt/EBITDAR leverage approximated 4.4x for the same period. Going forward, EBITDAR coverage is expected to approximate over 5x through 2018, and leverage, as measured by debt/EBITDAR is expected to improve to less than 4x over the same period due to a combination of new rates, amortizing capital lease obligations, and improving economic conditions in TEP's service territory.

[6] *Standard & Poor's RatingsDirect:* "Research Update: Tucson Electric Power Co. Outlook Revised To Negative, Ratings Affirmed On Parent's Planned Acquisition," February 10, 2016, at 2-4, emphasis added.

Fortis Financial Support; New Generation: In the fourth quarter of 2014 Fortis injected $225 million of equity into TEP to strengthen its balance sheet and to help fund the purchase of a 75% ownership interest in Unit 3 at the 550 MW natural gas-fired Gila River power plant for $164 million and to increase TEP's ownership stake in the 387 MW coal-fired Springerville Unit 1 power plant to 49.5% for $65 million. The acquisition is consistent with TEP's strategy to diversify its generation fuel mix and to shift towards cleaner generation resources.

Dividend Restriction: Per the terms of the merger, dividends to UNS from its regulated utilities cannot exceed 60% of annual net income for a period of five years or until their respective equity/total capitalization ratios reach 50%.

Constructive GRC Settlement; Filing Expected: TEP's last rate order, which reflects a 10% return on equity, continues the trend of constructive regulatory outcomes by the Arizona Corporation Commission (ACC). Fitch Ratings expects the regulatory environment in Arizona to remain constructive and expects TEP to file its next general rate case (GRC) in the fourth quarter of 2015.

Increased Capex Needs: TEP plans to spend $1.3 billion on capex through 2018, including $508 million this year, levels 10% higher than the preceding four-year period. The majority of capex is covered by operating cash flows, and Fitch projects TEP to be modestly FCF-negative through 2018 and expects future funding needs to be met by a balanced mix of debt and equity.[7]

III. ORIGINAL COST RATE OF RETURN

Q PLEASE DESCRIBE THIS SECTION OF YOUR TESTIMONY.

A In this section I will estimate a rate of return for TEP's original cost rate base. I will develop my recommended overall rate of return by developing a reasonable capital structure used for ratemaking purposes, recommend an embedded cost of debt component, and measure a fair rate of return on common equity for TEP in this proceeding. My fair return on common equity will also consider the financial integrity implications of my original cost rate of return recommendation.

[7] *Fitch Ratings: U.S. Integrated Electric Utilities Handbook: A Detailed Review of Integrated Electric Utilities*, "Corporates: Tucson Electric Power Co.," August 3, 2015, at 343.

III.A. TEP's Proposed Capital Structure

Q WHAT IS TEP'S PROPOSED CAPITAL STRUCTURE?

A TEP's proposed test-year-end capital structure is shown in Table 1 below:

TABLE 1

TEP's Proposed Capital Structure
(Proposed End-of-Test-Year Period)

Description	Weight
Long-Term Debt	49.97%
Common Equity	50.03%
Total Regulatory Capital Structure	100.00%

Sources: Direct Testimony of Kentton C. Grant at 12, and Schedule D-1, page 1.

Q IS TEP'S PROPOSED CAPITAL STRUCTURE REASONABLE?

A No. TEP's proposed end-of-test-year capital structure does not reflect its actual capital structure at the end-of-test-year period. As discussed by Mr. Kentton C. Grant at page 11 of his direct testimony, the Company's actual end-of-test-year period capital structure is shown below in Table 2.

TABLE 2

TEP's Capital Structure
(Actual End-of-Test-Year Period)
(June 30, 2015)

Description	Weight
Long-Term Debt	51.31%
Common Equity	48.69%
Total Regulatory Capital Structure	100.00%

Sources: Direct Testimony of Kentton C. Grant at 11, and Schedule D-1, page 1.

Q DO YOU BELIEVE IT IS REASONABLE FOR MR. GRANT TO ASK FOR A CAPITAL STRUCTURE THAT IS DIFFERENT THAN TEP'S ACTUAL END-OF-TEST-YEAR CAPITAL STRUCTURE?

A No. Mr. Grant asserts that the Company is working toward an approximate 50% common equity ratio of its total capital. However, in this test period its actual capital structure indicates that its common equity ratio is short of that goal, or 48.69%. This capital structure is reasonable, and is supportive of TEP's bond rating, including the improvement in its bond rating noted by TEP that took place in 2014. Unnecessarily adjusting TEP's actual capital structure will inflate its claimed revenue deficiency in this proceeding, without justification.

Q WHY WOULD AN INCREASE IN TEP'S CAPITAL STRUCTURE COMMON EQUITY RATIO INFLATE ITS REVENUE DEFICIENCY?

A Unnecessarily increasing the common equity ratio of TEP's actual capital structure will increase its revenue requirement because a larger percentage of common equity

will increase the overall rate of return and related income tax expense. This occurs because common equity is the most expensive form of capital and, unlike debt, is subject to income tax expense.

The revenue requirement cost of a 10% return on equity is approximately 16%, after reflecting a gross-up for income tax. The revenue requirement cost of debt to TEP is approximately 4.5% – marginal debt cost without a tax gross-up. Hence, common equity cost is currently about four times more expensive than the cost of debt.

III.B. Embedded Cost of Debt

Q WHAT IS THE EMBEDDED COST OF DEBT THAT THE COMPANY IS PROPOSING IN THIS PROCEEDING?

A The Company is proposing an embedded debt cost of 4.32%. The embedded debt cost, as developed on TEP Schedule D-2, is sponsored by Company witness Mr. Grant. Mr. Grant's estimated cost of debt of 4.32% is an increase to the end-of-test-period cost of debt of 4.14%. Mr. Grant adjusted TEP's debt cost by reflecting a planned retirement in August 2015 of two 1982 variable rate bond series.

I accept Mr. Grant's adjusted cost of debt because these retiring variable rate bonds likely can be financed at market interest rates that are at or below the estimated adjusted embedded cost of debt proposed by Mr. Grant of 4.32%. Therefore, I will accept TEP's proposed 4.32% cost of debt as a reasonable estimate of the cost of debt based on end of period actual long-term debt balances of $1,521 million, after maturing variable rate debt is refinanced.

III.C Return on Equity

Q PLEASE DESCRIBE WHAT IS MEANT BY A "UTILITY'S COST OF COMMON EQUITY."

A A utility's cost of common equity is the expected return that investors require on an investment in the utility. Investors expect to earn their required return from receiving dividends and through stock price appreciation.

Q PLEASE DESCRIBE THE FRAMEWORK FOR DETERMINING A REGULATED UTILITY'S COST OF COMMON EQUITY.

A In general, determining a fair cost of common equity for a regulated utility has been framed by two hallmark decisions of the U.S. Supreme Court: Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of W. Va., 262 U.S. 679 (1923) and Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944).

These decisions identify the general financial and economic standards to be considered in establishing the cost of common equity for a public utility. Those general standards provide that the authorized return should: (1) be sufficient to maintain financial integrity; (2) attract capital under reasonable terms; and (3) be commensurate with returns investors could earn by investing in other enterprises of comparable risk.

Q PLEASE DESCRIBE THE METHODS YOU HAVE USED TO ESTIMATE TEP'S COST OF COMMON EQUITY.

A I have used several models based on financial theory to estimate TEP's cost of common equity. These models are: (1) a constant growth Discounted Cash Flow ("DCF") model using consensus analysts' growth rate projections; (2) a constant

growth DCF using sustainable growth rate estimates; (3) a multi-stage growth DCF model; (4) a Risk Premium model; and (5) a Capital Asset Pricing Model ("CAPM"). I have applied these models to a group of publicly traded utilities that have investment risk similar to TEP.

III.D. Risk Proxy Group

Q PLEASE DESCRIBE HOW YOU IDENTIFIED A PROXY UTILITY GROUP THAT COULD BE USED TO REASONABLY REFLECT THE INVESTMENT RISK OF TEP AND USED TO ESTIMATE ITS CURRENT MARKET COST OF EQUITY.

A I first reviewed the proxy group selection criteria used by TEP witness Ms. Bulkley. However, I am not relying on Ms. Bulkley's proxy group for several reasons. First, I could not confirm that Ms. Bulkley's proxy group complied with her own proxy group selection criteria. Specifically, Ms. Bulkley stated that she only included companies who had 90% of their operating income from regulated electric operations. However, after a detailed review of her workpapers, I could not find a workpaper that confirmed that each of her proxy group selected companies met this proxy group selection criterion. Further, I am concerned about relying on an operating income selection criterion from a single year because operating income can vary based on non-recurring and/or abnormal events in any given year. As such, this operating income screen could be skewed if it is not based on normal operating conditions. While I could not confirm Ms. Bulkley's findings on this, I do note that her workpapers included SEC Form 10-Ks for her proxy group, which do provide the information to make this calculation. However, those SEC documents do not allow for a normalization of the operating income characteristics of each proxy company.

Further, a review of many of the companies included in Ms. Bulkley's proxy group, shows that many of them would not continue to meet her selection criteria in an updated analysis. Specifically, in an updated analysis, Duke Energy, and Empire District Electric Company would not have been in compliance with Ms. Bulkley's merger and acquisition criterion. As such, Ms. Bulkley's proxy group would have been reduced from 12 companies down to only 10.

Q PLEASE DESCRIBE HOW YOU DEVELOPED YOUR PROPOSED PROXY GROUP.

A I started with the *Value Line* Electric Utility Industry and excluded the companies that did not meet the following screening criteria:

- Have investment grade credit rating from S&P and Moody's.
- Have consistently paid dividends over the last two years.
- Have positive consensus analysts' growth rates from at least one of my sources: Zacks, SNL Financial, and Reuters.
- Have not been involved in recent merger and acquisition ("M&A") transactions or bankruptcy proceedings.
- Are classified as Regulated (80%+ of total assets are regulated) or Mostly Regulated (50%-80%) by the Edison Electric Institute ("EEI").

Q PLEASE DESCRIBE THE RESULTS OF THIS PROXY GROUP SELECTION PROCESS.

A The following companies were eliminated from the *Value Line* Electric Utility Industry, which based on these selection criteria:

1. MGE Energy was eliminated because it does not have an investment grade bond rating from S&P and Moody's. MGE Energy does not have a bond rating, unlike its utility subsidiary. The publicly traded utility company thus fails this selection criterion.

2. Otter Tail Power was eliminated because it does not have a positive analysts' growth rate from Zacks, SNL Financial or Reuters.

3. Many companies have been involved in M&A activities more recently, which resulted in removal of the following companies:

- Black Hills is acquiring SourceGas.
- Dominion is acquiring Questar Corp.
- Duke Energy is acquiring Piedmont Natural Gas.
- Empire is being acquired by Algonquin Power & Utilities Corp.
- Exelon Corp is merging with Pepco Inc.
- NextEra Energy is acquiring Hawaiian Electric.
- Fortis, Inc. is acquiring ITC Holdings, Inc.
- Southern Company is acquiring AGL Resources.
- TECO Energy is being acquired by Emera, Inc.

Based on this process, my proxy group consists of approximately 29 companies, as shown on my Exhibit MPG-3.

Q WHY IS IT APPROPRIATE TO REMOVE COMPANIES THAT DO NOT HAVE INVESTMENT GRADE BOND RATINGS FROM S&P AND MOODY'S?

A The proxy group should contain companies that have reasonable risk characteristics to that of TEP. TEP currently has investment grade bond ratings of BBB+ and A3 from S&P and Moody's, respectively. Selecting proxy group companies that have comparable credit ratings as TEP is an important and verifiable risk selection criterion.

Q WHY IS IT IMPORTANT TO SELECT PROXY GROUP COMPANIES THAT HAVE PAID DIVIDENDS OVER THE LAST TWO YEARS?

A Utility companies generally are regarded as income investments by the investment community. The ability to pay dividends in a predictable manner is an important risk assessment for an electric utility investment. Companies that have suspended or reduced dividends have generally gone through financial difficulty. The past financial difficulty may still impact the market valuation of the company's securities and/or credit rating. Therefore, it is important to eliminate companies that have reduced or eliminated dividends because the market valuation may be skewed, which can distort the estimate of the current market cost of equity. Please note, that TEP witness Ms. Bulkley also used dividend payment as a proxy group selection criterion.[8]

Q WHY IS IT IMPORTANT TO LIMIT THE PROXY GROUP COMPANIES TO THOSE THAT HAVE CONSENSUS ANALYSTS' GROWTH RATES PUBLISHED BY ZACKS, SNL FINANCIAL OR REUTERS?

A Selecting companies that have consensus analysts' growth rate projections from at least one of these three sources is an indication that market participants are following the security, and there is adequate liquidity and market demand for the security to support the assumption that the market valuation of the security is based on fundamental valuation principles. A stock that is thinly traded, or is not widely followed by the market, may have an observable market price which is inconsistent with fundamental valuation principles.

[8]Direct Testimony of Ann Bulkley at 20.

Q WHY IS IT APPROPRIATE TO EXCLUDE COMPANIES WHICH ARE INVOLVED IN M&A ACTIVITY FROM THE PROXY GROUP?

A M&A activity can distort the market factors used in DCF and risk premium studies. M&A activity can have impacts on stock prices, growth outlooks, and relative volatility in historical stock prices if the market was anticipating or expecting the M&A activity prior to it actually being announced. This distortion in the market data thus impacts the reliability of the DCF and risk premium estimates for a company involved in M&A.

Moreover, Companies generally enter into M&A in order to produce greater shareholder value by combining companies. The enhanced shareholder value normally could not be realized had the two companies not combined.

When companies announce an M&A, the public assesses the proposed merger and develops outlooks on the value of the two companies after the combination based on expected synergies or other value adds created by the M&A.

As a result, the stock value before the merger is completed may not reflect the forward-looking earnings and dividend payments for the company absent the merger or on a stand-alone basis. Therefore, an accurate DCF return estimate on companies involved in M&A activities cannot be produced because their stock prices do not reflect the stand-alone investment characteristics of the companies. Rather, the stock price more likely reflects the shareholder enhancement produced by the proposed transaction. For these reasons, it is appropriate to remove companies involved in M&A activity from a proxy group used to estimate a fair return on equity for a utility.

Q WHY IS IMPORTANT TO LIMIT COMPANIES INCLUDED IN YOUR PROXY GROUP TO THOSE WHICH HAVE BEEN CLASSIFIED BY EEI AS EITHER REGULATED OR MOSTLY REGULATED?

A EEI provides financial data to market participants which can be used to identify companies that are predominantly regulated utility companies. EEI classifies companies as Regulated if at least 80% of their assets are regarded as regulated utility operations. Mostly Regulated companies include publicly traded companies that have 50% to 80% of their assets dedicated to regulated utility operations. Hence, this selection criterion uses available market data to identify companies which are regarded as primarily regulated electric utilities.

This selection criterion identifies companies that are generally in the same industry as TEP, and therefore are appropriate for inclusion in a regulated utility proxy group. The industry is significant because utility companies are generally regarded as low-risk stable investments. This selection criterion is similar to Ms. Bulkley's use of a regulated operating income to total company operating income as a proxy group selection criterion. However, Ms. Bulkley's criterion can be impacted by abnormal or non-recurring impacts on annual operating income. Therefore, I believe the EEI selection criterion screen is a more reliable gauge to select companies that are predominantly regulated utilities.

Q PLEASE DESCRIBE WHY YOU BELIEVE YOUR PROXY GROUP IS REASONABLY COMPARABLE IN INVESTMENT RISK TO TEP.

A The proxy group is shown in Exhibit MPG-3. The proxy group has an average corporate credit rating from S&P of BBB+, which is identical to S&P's corporate credit rating for TEP. The proxy group has an average corporate credit rating from Moody's

of Baa1, which is one notch lower than TEP's corporate credit rating from Moody's of A3. Based on this information, I believe my proxy group is reasonably comparable in investment risk to TEP.

The proxy group has an average common equity ratio of 45.6% (including short-term debt) from SNL Financial ("SNL") and 47.9% (excluding short-term debt) from *The Value Line Investment Survey* ("*Value Line*") in 2015.

My recommended 48.7% common equity ratio is slightly higher but comparable to the proxy group. Based on these risk factors, I conclude the proxy group reasonably approximates the investment risk of TEP.

III.E. Discounted Cash Flow Model

Q PLEASE DESCRIBE THE DCF MODEL.

A The DCF model posits that a stock price is valued by summing the present value of expected future cash flows discounted at the investor's required rate of return or cost of capital. This model is expressed mathematically as follows:

$$P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} \ldots \frac{D_\infty}{(1+K)^\infty} \quad \text{(Equation 1)}$$

P_0 = Current stock price

D = Dividends in periods 1 - ∞

K = Investor's required return

This model can be rearranged in order to estimate the discount rate or investor-required return, "K." If it is reasonable to assume that earnings and dividends will grow at a constant rate, then Equation 1 can be rearranged as follows:

$K = D_1/P_0 + G$ (Equation 2)

K = Investor's required return

D_1 = Dividend in first year

P_0 = Current stock price

G = Expected constant dividend growth rate

Equation 2 is referred to as the annual "constant growth" DCF model.

Q PLEASE DESCRIBE THE INPUTS TO YOUR CONSTANT GROWTH DCF MODEL.

A As shown in Equation 2 above, the DCF model requires a current stock price, expected dividend, and expected growth rate in dividends.

Q WHAT STOCK PRICE HAVE YOU RELIED ON IN YOUR CONSTANT GROWTH DCF MODEL?

A I relied on the average of the weekly high and low stock prices of the utilities in the proxy group over a 13-week period ending on May 13, 2016. An average stock price is less susceptible to market price variations than a spot price. Therefore, an average stock price is less susceptible to aberrant market price movements, which may not reflect the stock's long-term value.

A 13-week average stock price reflects a period that is still short enough to contain data that reasonably reflects current market expectations, but the period is not so short as to be susceptible to market price variations that may not reflect the stock's long-term value. In my judgment, a 13-week average stock price is a reasonable balance between the need to reflect current market expectations and the need to capture sufficient data to smooth out aberrant market movements.

Q WHAT DIVIDEND DID YOU USE IN YOUR CONSTANT GROWTH DCF MODEL?

A I used the most recently paid quarterly dividend, as reported in *Value Line*.[9] This dividend was annualized (multiplied by 4) and adjusted for next year's growth to produce the D_1 factor for use in Equation 2 above.

Q WHAT DIVIDEND GROWTH RATES HAVE YOU USED IN YOUR CONSTANT GROWTH DCF MODEL?

A There are several methods that can be used to estimate the expected growth in dividends. However, regardless of the method, for purposes of determining the market-required return on common equity, one must attempt to estimate investors' consensus about what the dividend or earnings growth rate will be, and not what an individual investor or analyst may use to make individual investment decisions.

As predictors of future returns, security analysts' growth estimates have been shown to be more accurate than growth rates derived from historical data.[10] That is, assuming the market generally makes rational investment decisions, analysts' growth projections are more likely to influence investors' decisions which are captured in observable stock prices than growth rates derived only from historical data.

For my constant growth DCF analysis, I have relied on a consensus, or mean, of professional security analysts' earnings growth estimates as a proxy for investor consensus dividend growth rate expectations. I used the average of analysts' growth rate estimates from three sources: Zacks, SNL, and Reuters. All such projections were available on May 13, 2016, and all were reported online.

Each consensus growth rate projection is based on a survey of security analysts. There is no clear evidence whether a particular analyst is most influential

[9] *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.
[10] *See, e.g.,* David Gordon, Myron Gordon, and Lawrence Gould, "Choice Among Methods of Estimating Share Yield," *The Journal of Portfolio Management*, Spring 1989.

on general market investors. Therefore, a single analyst's projection does not as reliably predict consensus investor outlooks as does a consensus of market analysts' projections. The consensus estimate is a simple arithmetic average, or mean, of surveyed analysts' earnings growth forecasts. A simple average of the growth forecasts gives equal weight to all surveyed analysts' projections. Therefore, a simple average, or arithmetic mean, of analyst forecasts is a good proxy for market consensus expectations.

Q WHAT ARE THE GROWTH RATES YOU USED IN YOUR CONSTANT GROWTH DCF MODEL?

A The growth rates I used in my DCF analysis are shown in Exhibit MPG-4. The average growth rate for my proxy group is 5.09%.

Q WHAT ARE THE RESULTS OF YOUR CONSTANT GROWTH DCF MODEL?

A As shown in Exhibit MPG-5, the average and median constant growth DCF returns for my proxy group for the 13-week analysis are 8.71% and 8.70%, respectively.

Q DO YOU HAVE ANY COMMENTS ON THE RESULTS OF YOUR CONSTANT GROWTH DCF ANALYSIS?

A Yes. The constant growth DCF analysis for my proxy group is based on a group average long-term sustainable growth rate of 5.1%. The three- to five-year growth rates are higher than my estimate of a maximum long-term sustainable growth rate of 4.2%, which I discuss later in this testimony. I believe the constant growth DCF analysis produces a reasonable high-end return estimate.

Q HOW DID YOU ESTIMATE A MAXIMUM LONG-TERM SUSTAINABLE GROWTH RATE?

A A long-term sustainable growth rate for a utility stock cannot exceed the growth rate of the economy in which it sells its goods and services. Hence, the long-term maximum sustainable growth rate for a utility investment is best proxied by the projected long-term Gross Domestic Product ("GDP"). *Blue Chip Financial Forecasts* projects that over the next 5 and 10 years, the U.S. nominal GDP will grow approximately 4.2%. These GDP growth projections reflect a real growth outlook of around 2.1% and an inflation outlook of around 2.1% going forward. As such, the average growth rate over the next 10 years is around 4.2%, which I believe is a reasonable proxy of long-term sustainable growth.[11]

In my multi-stage growth DCF analysis, I discuss academic and investment practitioner support for using the projected long-term GDP growth outlook as a maximum sustainable growth rate projection. Hence, recognizing the long-term GDP growth rate as a maximum sustainable growth is logical, and is generally consistent with academic and economic practitioner accepted practices.

III.F. Sustainable Growth DCF

Q PLEASE DESCRIBE HOW YOU ESTIMATED A SUSTAINABLE LONG-TERM GROWTH RATE FOR YOUR SUSTAINABLE GROWTH DCF MODEL.

A A sustainable growth rate is based on the percentage of the utility's earnings that is retained and reinvested in utility plant and equipment. These reinvested earnings increase the earnings base (rate base). Earnings grow when plant funded by

[11] *Blue Chip Financial Forecasts*, March 1, 2016, at 14.

reinvested earnings is put into service, and the utility is allowed to earn its authorized return on such additional rate base investment.

The internal growth methodology is tied to the percentage of earnings retained in the company and not paid out as dividends. The earnings retention ratio is 1 minus the dividend payout ratio. As the payout ratio declines, the earnings retention ratio increases. An increased earnings retention ratio will fuel stronger growth because the business funds more investments with retained earnings.

The payout ratios of the proxy group are shown in my Exhibit MPG-6. These dividend payout ratios and earnings retention ratios then can be used to develop a sustainable long-term earnings retention growth rate. A sustainable long-term earnings retention ratio will help gauge whether analysts' current three- to five-year growth rate projections can be sustained over an indefinite period of time.

The data used to estimate the long-term sustainable growth rate is based on the Company's current market-to-book ratio and on *Value Line*'s three- to five-year projections of earnings, dividends, earned returns on book equity, and stock issuances.

As shown in Exhibit MPG-7, the average sustainable growth rate for the proxy group using this internal growth rate model is 4.46%.

Q WHAT IS THE DCF ESTIMATE USING THESE SUSTAINABLE LONG-TERM GROWTH RATES?

A A DCF estimate based on these sustainable growth rates is developed in Exhibit MPG-8. As shown there, a sustainable growth DCF analysis produces proxy group average and median DCF results for the 13-week period of 8.06% and 7.72%, respectively.

III.G. Multi-Stage Growth DCF Model

Q HAVE YOU CONDUCTED ANY OTHER DCF STUDIES?

A Yes. My first constant growth DCF is based on consensus analysts' growth rate projections, so it is a reasonable reflection of rational investment expectations over the next three to five years. The limitation on this constant growth DCF model is that it cannot reflect a rational expectation that a period of high/low short-term growth can be followed by a change in growth to a rate that is more reflective of long-term sustainable growth. Hence, I performed a multi-stage growth DCF analysis to reflect this outlook of changing growth expectations.

Q WHY DO YOU BELIEVE GROWTH RATES CAN CHANGE OVER TIME?

A Analyst-projected growth rates over the next three to five years will change as utility earnings growth outlooks change. Utility companies go through cycles in making investments in their systems. When utility companies are making large investments, their rate base grows rapidly, which in turn accelerates earnings growth. Once a major construction cycle is completed or levels off, growth in the utility rate base slows, and its earnings growth slows from an abnormally high three- to five-year rate to a lower sustainable growth rate.

As major construction cycles extend over longer periods of time, even with an accelerated construction program, the growth rate of the utility will slow simply because rate base growth will slow, and the utility has limited human and capital resources available to expand its construction program. Therefore, the three- to five-year growth rate projection should be used as a long-term sustainable growth rate but not without making a reasonable informed judgment to determine whether it

considers the current market environment, the industry, and whether the three- to five-year growth outlook is sustainable.

Q PLEASE DESCRIBE YOUR MULTI-STAGE GROWTH DCF MODEL.

A The multi-stage growth DCF model reflects the possibility of non-constant growth for a company over time. The multi-stage growth DCF model reflects three growth periods: (1) a short-term growth period, which consists of the first five years; (2) a transition period, which consists of the next five years (6 through 10); and (3) a long-term growth period, starting in year 11 through perpetuity.

For the short-term growth period, I relied on the consensus analysts' growth projections described above in relationship to my constant growth DCF model. For the transition period, the growth rates were reduced or increased by an equal factor, which reflects the difference between the analysts' growth rates and the long-term sustainable growth rate. For the long-term growth period, I assumed each company's growth would converge to the maximum sustainable long-term growth rate.

Q WHY IS THE GDP GROWTH PROJECTION A REASONABLE PROXY FOR THE MAXIMUM SUSTAINABLE LONG-TERM GROWTH RATE?

A Utilities cannot indefinitely sustain a growth rate that exceeds the growth rate of the economy in which they sell services. Utilities' earnings/dividend growth is created by increased utility investment or rate base. Such investment, in turn, is driven by service area economic growth and demand for utility service. In other words, utilities invest in plant to meet sales demand growth, and sales growth, in turn, is tied to economic growth in their service areas.

Q IS THERE RESEARCH THAT SUPPORTS YOUR POSITION THAT, OVER THE LONG TERM, A COMPANY'S EARNINGS AND DIVIDENDS CANNOT GROW AT A RATE GREATER THAN THE GROWTH OF THE U.S. GDP?

A Yes. This concept is supported in published analyst literature and academic work. Specifically, in a textbook titled "Fundamentals of Financial Management," published by Eugene Brigham and Joel F. Houston, the authors state as follows:

> The constant growth model is most appropriate for mature companies with a stable history of growth and stable future expectations. Expected growth rates vary somewhat among companies, but dividends for mature firms are often expected to grow in the future at about the same rate as nominal gross domestic product (real GDP plus inflation).[12]

The use of the economic growth rate is also supported by investment practitioners as outlined as follows:

> **Estimating Growth Rates**
>
> One of the advantages of a three-stage discounted cash flow model is that it fits with life cycle theories in regards to company growth. In these theories, companies are assumed to have a life cycle with varying growth characteristics. Typically, the potential for extraordinary growth in the near term eases over time and eventually growth slows to a more stable level.
>
> * * *
>
> Another approach to estimating long-term growth rates is to focus on estimating the overall economic growth rate. Again, this is the approach used in the *Ibbotson Cost of Capital Yearbook*. To obtain the economic growth rate, a forecast is made of the growth rate's component parts. Expected growth can be broken into two main parts: expected inflation and expected real growth. By analyzing these components separately, it is easier to see the factors that drive growth.[13]

[12] "*Fundamentals of Financial Management*," Eugene F. Brigham and Joel F. Houston, Eleventh Edition 2007, Thomson South-Western, a Division of Thomson Corporation at 298, emphasis added.

[13] *Morningstar, Inc., Ibbotson SBBI 2013 Valuation Yearbook* at 51 and 52.

Q IS THERE ANY ACTUAL INVESTMENT HISTORY THAT SUPPORTS THE NOTION THAT THE CAPITAL APPRECIATION FOR STOCK INVESTMENTS WILL NOT EXCEED THE NOMINAL GROWTH OF THE U.S. GDP?

A Yes. This is evident by a comparison of the compound annual growth of the U.S. GDP compared to the geometric growth of the U.S. stock market. Morningstar measures the historical geometric growth of the U.S. stock market over the period 1926-2014 to be approximately 5.9%. During this same time period, the U.S. nominal compound annual growth of the U.S. GDP was approximately 6.2%.[14]

As such, the compound geometric growth of the U.S. nominal GDP has been higher but comparable to the nominal growth of the U.S. stock market capital appreciation. This historical relationship indicates the U.S. GDP growth outlook is a conservative estimate of the long-term sustainable growth of U.S. stock investments.

Q HOW DID YOU DETERMINE A SUSTAINABLE LONG-TERM GROWTH RATE THAT REFLECTS THE CURRENT CONSENSUS OUTLOOK OF THE MARKET?

A I relied on the consensus analysts' projections of long-term GDP growth. *Blue Chip Economic Indicators* publishes consensus economists' GDP growth projections twice a year. These consensus analysts' GDP growth outlooks are the best available measure of the market's assessment of long-term GDP growth. These analyst projections reflect all current outlooks for GDP and are likely the most influential on investors' expectations of future growth outlooks. The consensus economists' published GDP growth rate outlook is 4.2% over the next 10 years.[15]

Therefore, I propose to use the consensus economists' projected 5- and 10-year average GDP consensus growth rates of 4.2%, as published by *Blue Chip*

[14] *Morningstar, Inc., Ibbotson SBBI 2015 Classic Yearbook* inflation rate of 3.0% at 91, and U.S. Bureau of Economic Analysis, January 29, 2016.
[15] *Blue Chip Economic Indicators*, March 10, 2016, at 14.

Economic Indicators, as an estimate of long-term sustainable growth. *Blue Chip Economic Indicators* projections provide real GDP growth projections of 2.1%, and GDP inflation of 2.1%,[16] over the 5-year and 10-year projection periods. These consensus GDP growth forecasts represent the most likely views of market participants because they are based on published consensus economist projections.

Q DO YOU CONSIDER OTHER SOURCES OF PROJECTED LONG-TERM GDP GROWTH?

A Yes, and these sources corroborate my consensus analysts' projections, as shown below in Table 3.

TABLE 3

GDP Forecasts

Source	Term	Real GDP	Inflation	Nominal GDP
EIA – Annual Earnings Outlook[17]	25 Yrs	2.4%	1.8%	4.2%
Congressional Budget Office[18]	10 Yrs	2.0%	2.0%	4.0%
Moody's Analytics[19]	30 Yrs	2.0%	2.0%	4.1%
Social Security Administration[20]	50 Yrs			4.5%
The Economist Intelligence Unit[21]	35 Yrs	1.9%	2.0%	3.9%
Blue Chip Economic Indicators	5-10 Yrs	2.1%	2.1%	4.2%

The EIA in its *Annual Energy Outlook* projects real GDP out until 2040. In its 2015 Annual Report, the EIA projects real GDP through 2040 to be in the range of 1.8% to 2.9%, with a midpoint or reference case of 2.4%, and a long-term GDP price

[16] *Id.*

inflation projection of 1.8%. The EIA data supports a long-term nominal GDP growth outlook of 4.2%.[17]

Also, the Congressional Budget Office ("CBO") makes long-term economic projections. The CBO is projecting real GDP growth to be 2.0% during the next 10 years, with a GDP price inflation outlook of 2.0%.[18] The CBO 10-year outlook for nominal GDP based on this projection is 4.0%.

Moody's Analytics also makes long-term economic projections. In its recent 30-year outlook to 2045, Moody's Analytics is projecting real GDP growth of 2.0% with GDP inflation of 2.0%.[19] Based on these projections, Moody's is projecting nominal GDP growth of 4.1% over the next 30 years.

The Social Security Administration makes long-term economic projections out to 2090. The Social Security Administration's nominal GDP projection, under its intermediate cost scenario of 50 years, is 4.5%.[20] This projection is in line with the consensus economists.

The Economist Intelligence Unit, a division of *The Economist* and a third-party data provider to SNL Financial, makes a long-term economic projection out to 2050.[21] The Economist Intelligence Unit is projecting real GDP growth of 1.9% with an inflation rate of 2.0% out to 2050. The real GDP growth projection is in line with the consensus economists. The long-term nominal GDP projection based on these outlooks is approximately 3.9%.

The real GDP and nominal GDP growth projections made by these independent sources support the use of the consensus economist 5-year and 10-year

---

[17]DOE/EIA Annual Energy Outlook 2015 With Projections to 2040, January 2016, at 4 and A-38.

[18]*CBO: The Budget and Economic Outlook: 2016 to 2026*, January 2016, at 140.

[19]www.economy.com, *Moody's Analytics Forecast*, January 6, 2016.

[20]www.ssa.gov, "2015 OASDI Trustees Report," Table VI.G4.

[21]*SNL Financial, Economist Intelligence Unit*, downloaded on January 13, 2016.

projected GDP growth outlooks as a reasonable estimate of market participants' long-term GDP growth outlooks.

Q WHAT STOCK PRICE, DIVIDEND, AND GROWTH RATES DID YOU USE IN YOUR MULTI-STAGE GROWTH DCF ANALYSIS?

A I relied on the same 13-week average stock prices and the most recent quarterly dividend payment data discussed above. For stage one growth, I used the consensus analysts' growth rate projections discussed above in my constant growth DCF model. The first stage growth covers the first five years, consistent with the term of the analyst growth rate projections. The second stage, or transition stage, begins in year 6 and extends through year 10. The second stage growth transitions the growth rate from the first stage to the third stage using a linear trend. For the third stage, or long-term sustainable growth stage, which starts in year 11, I used a 4.2% long-term sustainable growth rate, which is based on the consensus economists' long-term projected nominal GDP growth rate.

Q WHAT ARE THE RESULTS OF YOUR MULTI-STAGE GROWTH DCF MODEL?

A As shown in Exhibit MPG-10, the average and median DCF returns on equity for my proxy group using the 13-week average stock price are 7.99% and 7.89%, respectively.

Q PLEASE SUMMARIZE THE RESULTS FROM YOUR DCF ANALYSES.

A The results from my DCF analyses are summarized in Table 4 below:

TABLE 4

Summary of DCF Results

Description	Proxy Group Average	Proxy Group Median
Constant Growth DCF Model (Analysts' Growth)	8.71%	8.70%
Constant Growth DCF Model (Sustainable Growth)	8.06%	7.72%
Multi-Stage Growth DCF Model	7.99%	7.89%
Average	8.25%	8.10%

I concluded that my DCF studies support a return on equity of 8.70%, which is primarily based on my constant growth DCF result, which I find as a reasonable high-end DCF return estimate.

III.H. Risk Premium Model

Q PLEASE DESCRIBE YOUR BOND YIELD PLUS RISK PREMIUM MODEL.

A This model is based on the principle that investors require a higher return to assume greater risk. Common equity investments have greater risk than bonds because bonds have more security of payment in bankruptcy proceedings than common equity and the coupon payments on bonds represent contractual obligations. In contrast, companies are not required to pay dividends or guarantee returns on common equity investments. Therefore, common equity securities are considered to be more risky than bond securities.

This risk premium model is based on two estimates of an equity risk premium. First, I estimated the difference between the required return on utility common equity investments and U.S. Treasury bonds. The difference between the required return on common equity and the Treasury bond yield is the risk premium. I estimated the risk

premium on an annual basis for each year over the period 1986 through 2015. The common equity required returns were based on regulatory commission-authorized returns for electric utility companies. Authorized returns are typically based on expert witnesses' estimates of the contemporary investor-required return.

The second equity risk premium estimate is based on the difference between regulatory commission-authorized returns on common equity and contemporary "A" rated utility bond yields by Moody's. I selected the period 1986 through 2015 because public utility stocks consistently traded at a premium to book value during that period. This is illustrated in Exhibit MPG-11, which shows that the market to book ratio since 1986 for the electric utility industry was consistently above a multiple of 1.0x. Over this period, regulatory authorized returns were sufficient to support market prices that at least exceeded book value. This is an indication that regulatory authorized returns on common equity supported a utility's ability to issue additional common stock without diluting existing shares. It further demonstrates that utilities were able to access equity markets without a detrimental impact on current shareholders.

Based on this analysis, as shown in Exhibit MPG-12, the average indicated equity risk premium over U.S. Treasury bond yields has been 5.46%. Since the risk premium can vary depending upon market conditions and changing investor risk perceptions, I believe using an estimated range of risk premiums provides the best method to measure the current return on common equity for a risk premium methodology.

I incorporated five-year and 10-year rolling average risk premiums over the study period to gauge the variability over time of risk premiums. These rolling average risk premiums mitigate the impact of anomalous market conditions and

skewed risk premiums over an entire business cycle. As shown on my Exhibit MPG-12, the five-year rolling average risk premium over Treasury bonds ranged from 4.25% to 6.71%, while the 10-year rolling average risk premium ranged from 4.38% to 6.38%.

As shown on my Exhibit MPG-13, the average indicated equity risk premium over contemporary Moody's utility bond yields was 4.08%. The five-year and 10-year rolling average risk premiums ranged from 2.88% to 5.53% and 3.20% to 5.01%, respectively.

Q DO YOU BELIEVE THAT THE TIME PERIOD USED TO DERIVE THESE EQUITY RISK PREMIUM ESTIMATES IS APPROPRIATE TO FORM ACCURATE CONCLUSIONS ABOUT CONTEMPORARY MARKET CONDITIONS?

A Yes. The time period I use in this risk premium study is a generally accepted period to develop a risk premium study using "expectational" data.

Contemporary market conditions can change dramatically during the period that rates determined in this proceeding will be in effect. A relatively long period of time where stock valuations reflect premiums to book value is an indication that the authorized returns on equity and the corresponding equity risk premiums were supportive of investors' return expectations and provided utilities access to the equity markets under reasonable terms and conditions. Further, this time period is long enough to smooth abnormal market movement that might distort equity risk premiums. While market conditions and risk premiums do vary over time, this historical time period is a reasonable period to estimate contemporary risk premiums.

Alternatively, some studies, such as Morningstar referred to later in this testimony, have recommended that use of "actual achieved investment return data" in

a risk premium study should be based on long historical time periods. The studies find that achieved returns over short time periods may not reflect investors' expected returns due to unexpected and abnormal stock price performance. Short-term abnormal actual returns would be smoothed over time and the achieved actual investment returns over long time periods would approximate investors' expected returns. Therefore, it is reasonable to assume that averages of annual achieved returns over long time periods will generally converge on the investors' expected returns.

My risk premium study is based on expectational data, not actual investment returns, and, thus, need not encompass a very long historical time period.

Q BASED ON HISTORICAL DATA, WHAT RISK PREMIUM HAVE YOU USED TO ESTIMATE TEP'S COST OF COMMON EQUITY IN THIS PROCEEDING?

A The equity risk premium should reflect the relative market perception of risk in the utility industry today. I have gauged investor perceptions in utility risk today in Exhibit MPG-14. In Exhibit MPG-14, I show the yield spread between utility bonds and Treasury bonds over the last 36 years. As shown in this exhibit, the average utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utility bonds for this historical period are 1.52% and 1.97%, respectively. The utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utilities for 2016 were 1.46% and 2.58%, respectively. The current average "A" rated utility bond yield spread over Treasury bond yields is now lower than the 36-year average spread. The current "Baa" rated utility bond yield spread over Treasury bond yields is higher than the 36-year average spread.

A current 13-week average "A" rated utility bond yield of 4.05%, when compared to the current Treasury bond yield of 2.64% as shown in Exhibit MPG-15, page 1, implies a yield spread of around 141 basis points. This current utility bond yield spread is lower than the 36-year average spread for "A" rated utility bonds of 1.52%. The current spread for the "Baa" rated utility bond yield of 2.27% is higher than the 36-year average spread of 1.97%. However, when compared to the projected Treasury bond yield of 3.50%, the current "Baa" utility spread is around 1.41%, which is lower than the 36-year average of 1.97%.

These utility bond yield spreads are evidence that the market perception of utility risk is about average relative to this historical time period and demonstrate that utilities continue to have strong access to capital in the current market.

Q HOW DID YOU ESTIMATE TEP'S COST OF COMMON EQUITY WITH THIS RISK PREMIUM MODEL?

A I added a projected long-term Treasury bond yield to my estimated equity risk premium over Treasury yields. The 13-week average 30-year Treasury bond yield, ending May 13, 2016, was 2.64%, as shown in Exhibit MPG-15. *Blue Chip Financial Forecasts* projects the 30-year Treasury bond yield to be 3.50%, and a 10-year Treasury bond yield to be 2.8%.[22] Using the projected 30-year Treasury bond yield of 3.50%, and a Treasury bond risk premium of 4.25% to 6.71%, as developed above, produces an estimated common equity return in the range of 7.75% (3.50% + 4.25%) to 10.21% (3.50% + 6.71%). My risk premium estimates fall in the range of 7.75% to 10.21%.

[22] *Blue Chip Financial Forecasts*, May 1, 2016 at 2.

I next added my equity risk premium over utility bond yields to a current 13-week average yield on "Baa" rated utility bonds for the period ending May 13, 2016, of 4.91%. Adding the utility equity risk premium of 2.88% to 5.53%, as developed above, to a "Baa" rated bond yield of 5.53%, produces a cost of equity in the range of 7.79% (4.91% + 2.88%) to 10.44% (4.91% + 5.53%).

Q HOW DO YOU DETERMINE WHERE A REASONABLE RISK PREMIUM IS IN THE CURRENT MARKET?

A I observed the spread of Treasury securities relative to public utility bonds and corporate bonds in gauging whether or not the risk premium in current market prices is relatively stable relative to the past. What this observation of market evidence provides, and quite clearly, is that the valuations in the current market place an above average risk premium on securities that have greater risk.

This market evidence is summarized below in Table 5, which shows the utility bond yield spreads over Treasury bond yields on average for the period 1980 through 2016, and the spreads for the first quarter of 2016. I also show the corporate bond yield spreads for Aaa corporates and Baa corporates.

TABLE 5

Comparison of Yield Spreads Over Treasury Bonds

Description	Utility A	Utility Baa	Corporate Aaa	Corporate Baa
Average Historical Spread	1.52%	1.97%	0.84%	1.95%
2016 Spread	1.46%	2.58%	1.21%	2.59%

Source: Exhibit MPG-14.

The observable yield spreads shown in the table above illustrate that securities of greater risk have above average risk premiums relative to the long-term historical average risk premium. Specifically, A-rated utility bonds to Treasuries, a relatively low-risk investment, have a yield spread in 2016 that has been very comparable to that of its long-term historical yield spread. The Aaa corporate bond yield spread is actually below the yield spread over the last 36 years. This is an indication that low risk investments like Aaa corporate bond yield and A-rated utility bond yield have premium values relative to minimal risk Treasury securities.

In contrast, the higher risk Baa utility and corporate bond yields currently have an above average yield spread of approximately 60 basis points (2.58% vs. 1.97%). The higher risk Baa utility bond yields do not have the same premium valuations as their lower risk A-rated utility bond yields, and thus the yield spread for greater risk investments is wider than lower risk investments.

This illustrates that securities with greater risk such as Baa yields versus A yields are commanding above average risk premium spreads in the current marketplace. Utility equity securities are greater risk than Baa utility bonds. Because greater risk securities appear to support an above average risk premium relative to

historical averages, this would support an above average risk premium in measuring a fair return on equity for a utility stock or equity security.

Q WHAT IS YOUR RECOMMENDED RETURN FOR TEP BASED ON YOUR RISK PREMIUM STUDY?

A To be conservative, I am recommending slightly more weight to the high-end risk premium estimates than the low-end. I state this because of the relatively low level of interest rates now, but relative upward movements of utility yields more recently. Hence, I propose to provide 75% weight to my high-end risk premium estimates and 25% to the low-end. Applying these weights, the risk premium for Treasury bond yields would be approximately 6.1%,[23] which is considerably higher than the 31-year average risk premium of 5.46% and reasonably reflective of the 3.5% projected Treasury bond yield. A Treasury bond risk premium of 6.1% and projected Treasury bond yield of 3.5% produce a risk premium estimate of 9.60%. Similarly, applying these weights to the utility risk premium indicates a risk premium of 4.87%.[24] This risk premium is above the 31-year historical average risk premium of 4.08%. This risk premium in connection with the current Baa observable utility bond yield of 4.91% produces an estimated return on equity of 9.78%.

Based on this methodology, my Treasury bond risk premium is 9.60% and my utility bond risk premium indicates a return of 9.78%. This methodology produces a return on equity in the range of 9.60% to 9.80%, with a midpoint of 9.70%.

[23](4.25% * 25%) + (6.71% * 75%) = 6.09%.
[24](2.88% * 25%) + (5.53% * 75%) = 4.87%.

III.I. Capital Asset Pricing Model ("CAPM")

Q PLEASE DESCRIBE THE CAPM.

A The CAPM method of analysis is based upon the theory that the market-required rate of return for a security is equal to the risk-free rate, plus a risk premium associated with the specific security. This relationship between risk and return can be expressed mathematically as follows:

$R_i = R_f + B_i \times (R_m - R_f)$ where:

R_i = Required return for stock i

R_f = Risk-free rate

R_m = Expected return for the market portfolio

B_i = Beta - Measure of the risk for stock

The stock-specific risk term in the above equation is beta. Beta represents the investment risk that cannot be diversified away when the security is held in a diversified portfolio. When stocks are held in a diversified portfolio, firm-specific risks can be eliminated by balancing the portfolio with securities that react in the opposite direction to firm-specific risk factors (e.g., business cycle, competition, product mix, and production limitations).

The risks that cannot be eliminated when held in a diversified portfolio are non-diversifiable risks. Non-diversifiable risks are related to the market in general and are referred to as systematic risks. Risks that can be eliminated by diversification are regarded as non-systematic risks. In a broad sense, systematic risks are market risks, and non-systematic risks are business risks. The CAPM theory suggests that the market will not compensate investors for assuming risks that can be diversified away. Therefore, the only risk that investors will be compensated for are systematic

or non-diversifiable risks. The beta is a measure of the systematic or non-diversifiable risks.

Q PLEASE DESCRIBE THE INPUTS TO YOUR CAPM.

A The CAPM requires an estimate of the market risk-free rate, the Company's beta, and the market risk premium.

Q WHAT DID YOU USE AS AN ESTIMATE OF THE MARKET RISK-FREE RATE?

A As previously noted, *Blue Chip Financial Forecasts*' projected 30-year Treasury bond yield is 3.50%.[25] The current 30-year Treasury bond yield is 2.64%, as shown in Exhibit MPG-15. I used *Blue Chip Financial Forecasts*' projected 30-year Treasury bond yield of 3.50% for my CAPM analysis.

Q WHY DID YOU USE LONG-TERM TREASURY BOND YIELDS AS AN ESTIMATE OF THE RISK-FREE RATE?

A Treasury securities are backed by the full faith and credit of the United States government, so long-term Treasury bonds are considered to have negligible credit risk. Also, long-term Treasury bonds have an investment horizon similar to that of common stock. As a result, investor-anticipated long-run inflation expectations are reflected in both common stock required returns and long-term bond yields. Therefore, the nominal risk-free rate (or expected inflation rate and real risk-free rate) included in a long-term bond yield is a reasonable estimate of the nominal risk-free rate included in common stock returns.

[25] *Blue Chip Financial Forecasts*, May 1, 2016 at 2.

Treasury bond yields, however, do include risk premiums related to unanticipated future inflation and interest rates. A Treasury bond yield is not a risk-free rate. Risk premiums related to unanticipated inflation and interest rates are systematic or market risks. Consequently, for companies with betas less than 1.0, using the Treasury bond yield as a proxy for the risk-free rate in the CAPM analysis can produce an overstated estimate of the CAPM return.

Q WHAT BETA DID YOU USE IN YOUR ANALYSIS?

A As shown in Exhibit MPG-16, the proxy group average *Value Line* beta estimate is 0.75.

Q HOW DID YOU DERIVE YOUR MARKET RISK PREMIUM ESTIMATE?

A I derived two market risk premium estimates, a forward-looking estimate and one based on a long-term historical average.

The forward-looking estimate was derived by estimating the expected return on the market (as represented by the S&P 500) and subtracting the risk-free rate from this estimate. I estimated the expected return on the S&P 500 by adding an expected inflation rate to the long-term historical arithmetic average real return on the market. The real return on the market represents the achieved return above the rate of inflation.

Morningstar's *Stocks, Bonds, Bills and Inflation 2015 Classic Yearbook* estimates the historical arithmetic average real market return over the period 1926 to 2014 as 8.9%.[26] A current consensus analysts' inflation projection, as measured by the Consumer Price Index, is 2.3%.[27] Using these estimates, the expected market

[26] *Morningstar, Inc., Ibbotson SBBI 2015 Classic Yearbook* at 92.
[27] *Blue Chip Financial Forecasts*, May 1, 2016 at 2.

return is 11.40%.[28] The market risk premium then is the difference between the 11.40% expected market return, and my 3.50% risk-free rate estimate, or approximately 7.9%.

The historical estimate of the market risk premium was also estimated by Morningstar in *Stocks, Bonds, Bills and Inflation 2015 Classic Yearbook*. Morningstar makes several estimates of the market risk premium based on historical data. Morningstar's estimated market risk premium ranges from a low of 6 percentage points to a high of 7 percentage points. Morningstar estimates its various market risk premium ranges as follows. First, over the period 1926 through 2014, Morningstar's study estimated that the arithmetic average of the achieved total return on the S&P 500 was 12.1%,[29] and the total return on long-term Treasury bonds was 6.10%.[30] The indicated market risk premium is 6.0% (12.1% - 6.1% = 6.0%).

Q HOW DOES YOUR ESTIMATED MARKET RISK PREMIUM RANGE COMPARE TO THAT ESTIMATED BY MORNINGSTAR?

A Morningstar's analysis indicates that a market risk premium falls somewhere in the range of 6.3% to 7.0%. My market risk premium falls in the range of 6.0% to 7.9%. My average market risk premium of 7.0% is within Morningstar's range.

Morningstar estimates a forward-looking market risk premium based on actual achieved data from the historical period of 1926 through 2014. Using this data, Morningstar estimates a market risk premium derived from the total return on large company stocks (S&P 500), less the income return on Treasury bonds. The total return includes capital appreciation, dividend or coupon reinvestment returns, and annual yields received from coupons and/or dividend payments. The income return,

[28] { [(1 + 0.089) * (1 + 0.023)] – 1 } * 100.
[29] *Morningstar, Inc., Ibbotson SBBI 2015 Classic Yearbook* at 91.
[30] *Id.*

in contrast, only reflects the income return received from dividend payments or coupon yields. Morningstar claims that the income return is the only true risk-free rate associated with Treasury bonds and is the best approximation of a truly risk-free rate.[31] I disagree with this assessment from Morningstar, because it does not reflect a true investment option available to the marketplace and therefore does not produce a legitimate estimate of the expected premium of investing in the stock market versus that of Treasury bonds. Nevertheless, I will use Morningstar's conclusion to show the reasonableness of my market risk premium estimates.

Morningstar's range is based on several methodologies. First, Morningstar estimates a market risk premium of 7.0% based on the difference between the total market return on common stocks (S&P 500) less the income return on Treasury bond investments. Second, Morningstar found that if the New York Stock Exchange ("NYSE") was used as the market index rather than the S&P 500, that the market risk premium would be 6.8%, not 7.0%. Third, if only the two deciles of the largest companies included in the NYSE were considered, the market risk premium would be 6.3%.[32]

Finally, Morningstar found that the 7.0% market risk premium based on the S&P 500 was influenced by an abnormal expansion of price-to-earnings ("P/E") ratios relative to earnings and dividend growth during the period 1980 through 2001. Morningstar believes this abnormal P/E expansion is not sustainable.[33] Therefore, Morningstar adjusted this market risk premium estimate to normalize the growth in the P/E ratio to be more in line with the growth in dividends and earnings. Based on this

[31] *Id.* at 153.
[32] Morningstar observes that the S&P 500 and the NYSE Decile 1-2 are both large capitalization benchmarks. *Id.* at 152.
[33] *Id.* at 156.

alternative methodology, Morningstar published a long-horizon supply-side market risk premium of 6.1%.[34]

Q WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?

A As shown in Exhibit MPG-17, based on my low market risk premium of 6.0% and my high market risk premium of 7.9%, a risk-free rate of 3.50%, and a beta of 0.75, my CAPM analysis produces a return of 8.01% to 9.44%. Based on my assessment of risk premiums in the current market, as discussed above, I recommend giving 75% weight to my high-end CAPM return estimate and 25% weight to the low-end return estimate. This produces a recommended CAPM return estimate of approximately 9.08%,[35] rounded to 9.1%.

III.J. Return on Equity Summary

Q BASED ON THE RESULTS OF YOUR RETURN ON COMMON EQUITY ANALYSES DESCRIBED ABOVE, WHAT RETURN ON COMMON EQUITY DO YOU RECOMMEND FOR TEP?

A Based on my analyses, I estimate TEP's current market cost of equity to be 9.3%.

[34] *Id.* at 157.
[35] (8.01% * 25%) + (9.44% * 75%) = 9.08%.

TABLE 6

Return on Common Equity Summary

Description	Results
DCF	8.7%
Risk Premium	9.7%
CAPM	9.1%

My recommended return on common equity of 9.30% is at the approximate midpoint of my estimated range of 8.9% to 9.7%. As shown in Table 6 above, the high-end of my estimated range is based on my risk premium studies. The low-end is based on my DCF studies and CAPM return.

My return on equity estimates reflect observable market evidence, the impact on Federal Reserve policies on current and expected long-term capital market costs, an assessment of the current risk premium built into current market securities, and a general assessment of the current investment risk characteristics of the electric utility industry, and the market's demand for utility securities.

III.K. Financial Integrity

Q WILL YOUR RECOMMENDED OVERALL RATE OF RETURN SUPPORT AN INVESTMENT GRADE BOND RATING FOR TEP?

A Yes. I have reached this conclusion by comparing the key credit rating financial ratios for TEP, at my proposed return on equity, and the Company's actual test-year-end capital structure, to S&P's benchmark financial ratios using S&P's new credit metric ranges.

Q PLEASE DESCRIBE THE MOST RECENT S&P FINANCIAL RATIO CREDIT METRIC METHODOLOGY.

A S&P publishes a matrix of financial ratios that correspond to its assessment of the business risk of utility companies and related bond ratings. On May 27, 2009, S&P expanded its matrix criteria by including additional business and financial risk categories.[36]

Based on S&P's most recent credit matrix, the business risk profile categories are "Excellent," "Strong," "Satisfactory," "Fair," "Weak," and "Vulnerable." Most utilities have a business risk profile of "Excellent" or "Strong."

The financial risk profile categories are "Minimal," "Modest," "Intermediate," "Significant," "Aggressive," and "Highly Leveraged." Most of the utilities have a financial risk profile of "Aggressive." TEP has a "Strong" business risk profile and a "Significant" financial risk profile.

Q PLEASE DESCRIBE S&P'S USE OF THE FINANCIAL BENCHMARK RATIOS IN ITS CREDIT RATING REVIEW.

A S&P evaluates a utility's credit rating based on an assessment of its financial and business risks. A combination of financial and business risks equates to the overall assessment of TEP's total credit risk exposure. On November 19, 2013, S&P updated its methodology. In its update, S&P published a matrix of financial ratios that defines the level of financial risk as a function of the level of business risk.

S&P publishes ranges for three primary financial ratios that it uses as guidance in its credit review for utility companies. The two core financial ratio benchmarks it relies on in its credit rating process include: (1) Debt to Earnings

[36]S&P updated its 2008 credit metric guidelines in 2009, and incorporated utility metric benchmarks with the general corporate rating metrics. *Standard & Poor's RatingsDirect*: "Criteria Methodology: Business Risk/Financial Risk Matrix Expanded," May 27, 2009.

Before Interest, Taxes, Depreciation and Amortization ("EBITDA"); and (2) Funds From Operations ("FFO") to Total Debt.[37]

Q HOW DID YOU APPLY S&P'S FINANCIAL RATIOS TO TEST THE REASONABLENESS OF YOUR RATE OF RETURN RECOMMENDATIONS?

A I calculated each of S&P's financial ratios based on TEP's cost of service for its retail jurisdictional operations. While S&P would normally look at total consolidated TEP financial ratios in its credit review process, my investigation in this proceeding is not the same as S&P's. I am attempting to judge the reasonableness of my proposed cost of capital for rate-setting in TEP's retail regulated utility operations. Hence, I am attempting to determine whether my proposed rate of return will in turn support cash flow metrics, balance sheet strength, and earnings that will support an investment grade bond rating and TEP's financial integrity.

Q DID YOU INCLUDE ANY OFF-BALANCE SHEET DEBT EQUIVALENTS?

A Yes. As shown on page 3 of my Exhibit MPG-18, I included $8.9 million of off-balance sheet debt equivalents attributed to operating leases and their associated interest and depreciation expenses. I did not include some of the off-balance sheet debt equivalents that S&P includes in its credit rating review. Certain off-balance sheet debt equivalents, such as pension and other post-employment benefits ("OPEB"), and accrued interest expense, were excluded from my jurisdictional credit metric study because these items are controllable by utility management or do not relate to regulated cost of service.

[37] *Standard & Poor's RatingsDirect*: "Criteria: Corporate Methodology," November 19, 2013.

Q PLEASE DESCRIBE THE RESULTS OF THIS CREDIT METRIC ANALYSIS AS IT RELATES TO TEP.

A The S&P financial metric calculations for TEP at a 9.3% return are developed on Exhibit MPG-18, page 1. S&P currently rates TEP's business risk as "Strong" and financial risk as "Significant." The credit metrics produced below, with this financial and business risk outlook by S&P, will be used to assess the strength of the credit metrics based on TEP's retail operations in Arizona.

TEP's adjusted total debt ratio is approximately 51%. As shown on page 4 of Exhibit MPG-18, this adjusted debt ratio is lower than S&P's median debt ratio of approximately 54% for BBB-rated utilities and comparable to the S&P median debt ratio of approximately 52% for A-rated utilities. Hence, I concluded this capital structure reasonably supports TEP's current investment grade bond rating. This adjusted total debt ratio will support an investment grade bond rating.

Based on an equity return of 9.3%, TEP will be provided an opportunity to produce a debt to Earnings Before Interest, Taxes, Depreciation and Amortization ("EBITDA") ratio of 3.3x. This is within S&P's "Intermediate" guideline range of 2.5x to 3.5x,[38] which reflects less risk and a stronger metric than needed to support TEP's financial risk ranking of "Significant." This ratio also supports an investment grade credit rating.

TEP's retail operations FFO to total debt coverage at a 9.3% equity return is 15%, which is within S&P's "Significant" metric guideline range of 13% to 23%. This FFO/total debt ratio will support an investment grade bond rating.

At my recommended return on equity of 9.3%, the Company's proposed embedded debt cost, and TEP's actual test-year-end capital structure, TEP's financial

[38] *Id.*

credit metrics continue to be supportive of its investment grade utility bond rating.

IV. RESPONSE TO MS. BULKLEY

Q WHAT RETURN ON COMMON EQUITY IS TEP PROPOSING FOR THIS PROCEEDING?

A Ms. Bulkley, who sponsors TEP's return on equity recommendation, proposes a return on equity of 10.35%.[39] Her recommended range of 10.00% to 10.60%[40] is based on: (1) a constant growth DCF analysis, (2) a multi-stage DCF analysis, (3) CAPM studies, and corroborated by (4) a Bond Yield Plus Risk Premium methodology. Ms. Bulkley also concluded that the appropriate Fair Value Increment for TEP is 1.42% with a resulting ROR-FVRB of 5.69%.

Q ARE MS. BULKLEY'S RETURN ON EQUITY ESTIMATES REASONABLE?

A No. Ms. Bulkley's estimated return on equity range of 10.00% to 10.60% is overstated and should be rejected. Ms. Bulkley's analyses produce excessive results for various reasons, including the following: (1) her constant growth DCF results are based on excessive, unsustainable growth rates; (2) her multi-stage DCF is based on an unrealistic GDP growth estimate; (3) her CAPM is based on inflated market risk premiums; (4) her Bond Yield Plus Risk Premium is based on inflated utility equity risk premiums; and (5) her risk premium studies are based on stale Treasury yields.

Q PLEASE SUMMARIZE MS. BULKLEY'S RETURN ON EQUITY ESTIMATES.

A Ms. Bulkley's return on equity estimates are summarized in Table 7 below. In Column 2, I show the results with prudent and sound adjustments to her common

[39] Direct Testimony of Ann Bulkley at 3.
[40] *Id.*

equity return estimates. With such adjustments to her proxy groups' DCF, CAPM, and Risk Premium return estimates, Ms. Bulkley's own studies show my recommended return on equity for TEP is reasonable.

TABLE 7

Bulkley's Return on Equity Estimates

Description	Mean[1] (1)	Adjusted[2] (2)
Constant Growth DCF:		
30-Day Average	9.59%	9.59%
90-Day Average	9.46%	9.46%
180-Day Average	9.29%	9.29%
Average	9.45%	9.45%
Multi-Stage Growth DCF:		
30-Day Average	9.78%	8.84%
90-Day Average	9.64%	8.70%
180-Day Average	9.44%	8.49%
Average	9.62%	8.68%
DCF Range	9.5% to 9.6%	8.7% to 9.5%
CAPM Results (Bloomberg Beta)		
Current 30-Yr Treasury (3.09%, Revised to 2.72%)	10.28%	7.59%
Near-Term Projected 30-Yr Treasury (3.57%, Revised to 3.15%)	10.42%	8.02%
Long-Term Projected 30-Yr Treasury (4.80%, Revised to 4.50%)	10.80%	9.37%
Average	10.50%	8.33%
CAPM Results (*Value Line* Beta)		
Current 30-Yr Treasury (3.09%, Revised to 2.72%)	11.00%	8.09%
Near-Term Projected 30-Yr Treasury (3.57%, Revised to 3.15%)	11.12%	8.52%
Long-Term Projected 30-Yr Treasury (4.80%, Revised to 4.50%)	11.40%	9.87%
Average	11.17%	8.83%
Risk Premium		
Current 30-Yr Treasury (3.09%, Revised to 2.72%)	9.91%	8.37%
Near-Term Projected 30-Yr Treasury (3.57%, Revised to 3.15%)	10.12%	8.80%
Long-Term Projected 30-Yr Treasury (4.80%, Revised to 4.50%)	10.66%	10.15%
Average	10.23%	9.11%
Range	10.0% - 10.60%	
Recommended Return on Equity	10.35%	

Sources:
[1] Bulkley Direct Testimony at 53.
[2] Exhibit MPG-19.

Q PLEASE DESCRIBE MS. BULKLEY'S CONSTANT GROWTH DCF RETURN ESTIMATES.

A Her constant growth DCF returns are developed in Exhibit AEB-1, pages 1-3. Ms. Bulkley's constant growth DCF models are based on consensus growth rates published by Zacks and First Call, and individual growth rate projections made by *Value Line*.

Ms. Bulkley concluded that based on the constant growth DCF analyses, her results fall in the range of 9.29% to 9.59%, with a midpoint of 9.45%.[41]

Q ARE THE DCF RESULTS PRODUCED BY MS. BULKLEY REASONABLE?

A Ms. Bulkley's DCF return estimates are overly optimistic because they are based on an average growth rate of approximately 5.55% (Exhibit AEB-1). This growth rate is not a reasonable estimate of long-term sustainable growth because it is significantly higher than the consensus economists' projections of long-term GDP growth of 4.2% as described above in regard to my own DCF studies. As such, her constant growth DCF return should be considered as a high-end estimate of the current market cost of equity.

Q DID MS. BULKLEY PERFORM A MULTI-STAGE GROWTH DCF ANALYSIS?

A Yes, she did. However, as a general observation, the results of Ms. Bulkley's multi-stage growth DCF analysis appears to be economically illogical in comparison to her constant growth DCF study. In Ms. Bulkley's constant growth DCF study, she uses a long-term sustainable growth rate of 5.55%, and produces a constant growth DCF result in the range of 9.29% to 9.59%. In her multi-stage model, she uses a long-term

[41] Bulkley Direct Testimony at 31.

sustainable growth rate of 5.4% which is lower than that included in her constant growth DCF model of 5.55%, but her multi-stage model results on average are 9.62% which are higher than her constant growth study. This seems irrational because the growth rate in her multi-stage growth DCF model is lower than the growth rate in her constant growth DCF model. As such, the results of Ms. Bulkley's DCF studies appear to be illogical and suspect.

More specifically to the inputs in Ms. Bulkley's multi-stage DCF analysis, I find her development of a long-term steady-state growth rate of 5.4% is unreasonably high. I believe it is unreasonably high because the long-term steady-state growth rate of 5.4% is considerably higher than the GDP growth rate projections made by independent economists. These independent economists' projections of future GDP growth are available to investors, and likely are used by investors in forming future investment outlooks. This indicates that Ms. Bulkley's assumed 5.4% long-term steady-state growth rate is not reflective of market participants' outlooks for future growth for the proxy group companies.

Q HOW DID MS. BULKLEY CALCULATE A LONG-TERM GROWTH RATE?

A Ms. Bulkley relied on the long-term historical real GDP growth of 3.25%, as measured over the period 1929 through 2014. She then adjusted this to a nominal GDP growth by an inflation rate of 2.09%, which is based on: (1) the average long-term projected growth rate in the Consumer Price Index ("CPI") of 2.30%, (2) the compound annual growth rate of the CPI for all-urban consumers for 2025 – 2040 of 2.11% as projected by the EIA, and (3) the compound annual growth rate of the GDP chain-price index for 2025-2040 of 1.85% as reported by the EIA.[42] Using an inflation factor of 2.09%

[42]Direct Testimony of Ann Bulkley at 20.

and an historical real GDP growth of 3.25%, Ms. Bulkley produced a nominal GDP growth rate outlook of 5.40%.[43]

Q IS MS. BULKLEY'S LONG-TERM GROWTH RATE ESTIMATE OF 5.40% REASONABLE?

A No. The methodologies used by Ms. Bulkley to calculate this growth rate simply are not based on market participants' outlooks for future growth opportunities of the proxy companies specifically, or growth of the industry generally. Therefore, these growth rate outlooks simply are not based on data that is likely used by investors to inform investment decisions.

Ms. Bulkley's growth rate of 5.40% reflects a historical real GDP growth rate of 3.25%. This real GDP growth rate does not reflect consensus analysts" projected future real GDP growth. Again, her long-term growth rate is not reasonable and should be rejected.

Q CAN YOU PROVIDE MORE DETAIL ON WHY MS. BULKLEY'S GDP LONG-TERM GROWTH RATE IS NOT REFLECTIVE OF CURRENT MARKET EXPECTATIONS?

A Yes. In order to measure the current market cost of equity demanded by investors in today's marketplace, it is necessary to reasonably capture the outlooks by investors used to form observable stock prices used in the various time periods underlying Ms. Bulkley's and my DCF studies. Ms. Bulkley's growth rates simply ignore current consensus analysts' outlooks for future growth, and therefore are not a reasonable estimate of what market participants have relied on in order to produce those market valuations, for example.

[43] *Id.*

The consensus economists' projected GDP growth rate is much lower than the GDP growth rate used by Ms. Bulkley in her DCF analysis. A comparison of Ms. Bulkley's GDP growth rate and consensus economists' projected growth over the next 5 and 10 years is shown in Table 8. As shown in this table, Ms. Bulkley's GDP rate of 5.40% reflects real GDP of 3.3% and GDP inflation of 2.1%. However, consensus economists' projections of nominal GDP over the next 5 and 10 years are 4.2%.

As is clearly evident in Table 8, Ms. Bulkley's historical GDP growth is much higher than, and not representative of, consensus market expected forward-looking GDP growth.

TABLE 8

GDP Projections

Description	GDP Inflation	Real GDP	Nominal GDP
Ms. Bulkley[1]	2.1%	3.3%	5.40%
Consensus Economists (5-Year)[2]	2.1%	2.1%	4.20%
Consensus Economists (10-Year)[2]	2.0%	2.1%	4.20%

Sources:

[1]Direct Testimony of Ann Bulkley at 28.
[2]*Blue Chip Economic Indicators*, March 10, 2016 at 14.

Ms. Bulkley's 5.40% nominal GDP growth rate is not reflective of consensus market expectations and should be rejected. Indeed, Ms. Bulkley's 5.40% GDP growth rate outlook is inconsistent with the consensus of economists' independent projections of future long-term GDP growth, and is also inconsistent with projections made by the U.S. EIA and CBO (as referenced in my testimony above where I describe the parameters used in my own multi-stage growth DCF analyses). Those agencies also project nominal GDP much more consistent with the consensus independent economists' projections discussed in Table 8 above. For all these

reasons, Ms. Bulkley's GDP growth outlook rate projections are simply out of line and out of touch with the consensus market outlooks.

Q HOW WOULD MS. BULKLEY'S MULTI-STAGE GROWTH DCF MODEL CHANGE IF YOU USE THE CONSENSUS ECONOMISTS' LONG-TERM SUSTAINABLE GROWTH RATE?

A As shown below in Table 9, revising the GDP growth rate to the consensus analysts' projection of 4.2% reduces Ms. Bulkley's midpoint multi-stage growth DCF return from 9.62% to 8.68%.

TABLE 9

Bulkley Multi-Stage Growth DCF Analysis

Description	Mean[1] (1)	Adjusted[2] (2)
30-Day Average	9.78%	8.84%
90-Day Average	9.64%	8.70%
180-Day Average	9.44%	8.49%
Average	9.62%	8.68%

Sources:
[1]Bulkley Direct Testimony at 53.
[2] Exhibit MPG-19.

Q WHAT IS A REASONABLE DCF RETURN FOR TEP BASED ON MS. BULKLEY'S CONSTANT GROWTH DCF ESTIMATES AND YOUR SOUND ADJUSTMENTS TO HER MULTI-STAGE DCF RESULTS?

A Giving equal weight to Ms. Bulkley's constant growth DCF estimates (9.45%) and my revision of her multi-stage DCF estimates (8.68%), the return on equity for TEP falls in the range of 8.7% to 9.5%, with a midpoint of 9.1%.

Q DO YOU AGREE WITH MS. BULKLEY THAT THE DCF RESULTS ARE AFFECTED BY ANOMALOUS MARKET CONDITIONS?

A While I agree with Ms. Bulkley that certain DCF returns produce lower cost of equity, some DCF estimates based on excessive growth rates produce an overstated cost of equity. However, these anomalous conditions as discussed by Ms. Bulkley also affect the inputs for other forward-looking methodologies such as the CAPM and risk premium. Therefore, to minimize the drawbacks of each model, the Commission should not consider the results of any single methodology in isolation. Hence, to produce a more reliable and fair return estimate for TEP, the Commission should consider the results from various cost of capital methodologies. I believe this approach will balance the interests of all stakeholders and produce a fair return on equity for TEP.

Q PLEASE DESCRIBE THE ISSUES YOU TAKE WITH MS. BULKLEY'S CAPM ANALYSES.

A My major concern with Ms. Bulkley's CAPM analysis is her inflated market risk premium estimates. I also take issue with Ms. Bulkley's stale risk-free rates based on *Blue Chip* publications which are almost a year old.

Q PLEASE DESCRIBE MS. BULKLEY'S MARKET RISK PREMIUMS.

A Ms. Bulkley developed three market risk premium estimates. They are DCF-derived market risk premiums of 10.33%, 9.85% and 8.61%, which are based on market DCF returns of 13.41%, less the current, near-term projected and long-term projected 30-year Treasury bond yields of 3.09%, 3.57% and 4.80%, respectively.[44]

[44]Direct Testimony of Ann Bulkley at 39-40 and Exhibit AEB-5.

Q WHAT ISSUES DO YOU HAVE WITH MS. BULKLEY'S DCF-DERIVED MARKET RISK PREMIUM ESTIMATES?

A Ms. Bulkley's DCF-derived market risk premiums are based on a market return of 13.41%, which consists of a growth rate component of approximately 11.23% and a dividend yield of approximately 2.07%.[45] As discussed above, the DCF model requires a long-term sustainable growth rate. Ms. Bulkley's sustainable market growth rate of over 11.0% is far too high to be a rational outlook for sustainable long-term market growth. These growth rates are more than two times the growth rate of the U.S. GDP long-term growth outlook of 4.2%.

As a result of this unreasonable long-term market growth rate estimate, Ms. Bulkley's market DCF returns are inflated and not reliable. Consequently, Ms. Bulkley's 10.33% (3.09%), 9.85% (3.57%) and 8.61% (4.80%) market risk premiums are inflated and not reliable.

Q IS THERE INFORMATION ON ACTUAL ACHIEVED CAPITAL APPRECIATION FOR THE MARKET INDEX USED BY MS. BULKLEY?

A Yes. Morningstar estimates the actual capital appreciation for the S&P 500 over the period 1926 through 2014 to have been 5.9% to 7.8%.[46] While I do not endorse the use of a historical growth rate to draw assessments of the market's forward-looking growth rate outlooks, this data can be used to show how the market return estimates produced by Ms. Bulkley are unreasonable and inflated. Specifically, using the highest historical arithmetic average growth rate of 7.8% and an expected average dividend yield of 2.1% as estimated by Ms. Bulkley, would suggest a forward-looking market DCF return estimate of 9.9%. Further, simply observing the geometric and

[45]Exhibit AEB-5.
[46]2015 Ibbotson *SBBI Classic Yearbook* at 91.

arithmetic average historical market risk premium also shows these estimates to be reasonable, and Ms. Bulkley's estimated DCF return on the market of approximately 13.41% to be excessive. Specifically, historically, the geometric and arithmetic average total return on the market has ranged from 10.1% to 12.1%.[47]

Virtually all historical data shows that Ms. Bulkley's 13.41% projected return on the market is excessive and produces an inflated market risk premium.

Q WHAT ISSUES DO YOU HAVE WITH MS. BULKLEY'S RISK-FREE RATES?

A Ms. Bulkley's risk-free rates are based on Bloomberg's current and *Blue Chip* projected 30-year Treasury yields, which are almost a year old. Based on the most recent *Blue Chip* publication the current, near-term and projected 30-year Treasury yields are 2.72%,[48] 3.15%[49] and 4.50%,[50] respectively.

Q CAN MS. BULKLEY'S CAPM ANALYSIS BE REVISED TO REFLECT A MORE REASONABLE MARKET RISK PREMIUM?

A Yes. Using (1) the updated risk-free rates of 2.72%, 3.15% and 4.50%; (2) average published Bloomberg and *Value Line* beta estimates of 0.696 and 0.767,[51] respectively; and (3) the 7.00% market risk premium, which is the highest Morningstar estimate of the market risk premium, Ms. Bulkley's CAPM would be no higher than 8.8%.

---

[47] *Id.*
[48] *Blue Chip Financial Forecasts*, May 1, 2016 at 2.
[49] *Id.*
[50] *Blue Chip Financial Forecasts*, December 1, 2015 at 14.
[51] Exhibit AEB-9.

Q PLEASE DESCRIBE MS. BULKLEY'S BOND YIELD PLUS RISK PREMIUM.

A As shown on TEP Exhibit AEB-6, Ms. Bulkley constructs a risk premium return on equity estimate based on the premise that equity risk premiums are inversely related to interest rates. She estimates an average electric risk premium of 5.65% over the period 1992 through the second quarter of 2015. Then she applies a regression formula to the current, near-term, and long-term projected 30-year Treasury bond yields of 3.09%, 3.57%, and 4.80% to produce electric risk premiums of 9.91%, 10.12%, and 10.66%, respectively. The midpoint of Ms. Bulkley's risk premium estimates is 10.23%.

Q IS MS. BULKLEY'S BOND YIELD PLUS RISK PREMIUM METHODOLOGY REASONABLE?

A No. Ms. Bulkley's contention that there is a simplistic inverse relationship between equity risk premiums and interest rates is not supported by academic research. While academic studies have shown that, in the past, there has been an inverse relationship among these variables, researchers have found that the relationship changes over time and is influenced by changes in perception of the risk of bond investments relative to equity investments, and not simply changes to interest rates.[52]

In the 1980s, equity risk premiums were inversely related to interest rates, but that was likely attributable to the interest rate volatility that existed at that time. As such, when interest rates were more volatile, the relative perception of bond investment risk increased relative to the investment risk of equities. This changing investment risk perception caused changes in equity risk premiums.

[52]"The Market Risk Premium: Expectational Estimates Using Analysts' Forecasts," Robert S. Harris and Felicia C. Marston, *Journal of Applied Finance*, Volume 11, No. 1, 2001 and "The Risk Premium Approach to Measuring a Utility's Cost of Equity," Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *Financial Management*, Spring 1985.

In today's marketplace, interest rate volatility is not as extreme as it was during the 1980s.[53] Nevertheless, changes in the perceived risk of bond investments relative to equity investments still drive changes in equity premiums. However, a relative investment risk differential cannot be measured simply by observing nominal interest rates. Changes in nominal interest rates are heavily influenced by changes to inflation outlooks, which also change equity return expectations. As such, the relevant factor needed to explain changes in equity risk premiums is the relative changes to the risk of equity versus debt securities investments, and not simply changes in interest rates.

Importantly, Ms. Bulkley's analysis simply ignores investment risk differentials. She bases her adjustment to the equity risk premium exclusively on changes in nominal interest rates. This is a flawed methodology that does not produce accurate or reliable risk premium estimates.

Q CAN MS. BULKLEY'S BOND YIELD PLUS RISK PREMIUM ANALYSIS BE REVISED TO REFLECT CURRENT PROJECTIONS OF TREASURY YIELDS?

A Yes. Disregarding Ms. Bulkley's simplistic notion of an inverse relationship between interest rates and the risk premium will produce more realistic results. Adding Ms. Bulkley's average equity risk premium of 5.65% to the updated 3.50% consensus economists' projected Treasury bond yield two years out, will produce a CAPM return of 9.15%.

[53] "The Risk Premium Approach to Measuring a Utility's Cost of Equity," Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *Financial Management*, Spring 1985, at 44.

Q DO YOU HAVE ANY COMMENTS CONCERNING HER CONTENTION THAT INTEREST RATES ARE GOING TO INCREASE SUBSTANTIALLY?

A Yes. Ms. Bulkley develops her risk premium studies mainly relying on near-term and long-term projected interest rates, which she believes are expected to increase substantially. Ms. Bulkley's proposal to rely mainly on forecasted Treasury bond yields is unreasonable because she is not considering the highly likely outcome that current observable interest rates will prevail during the period rates determined in this proceeding will be in effect. This is important, because while current observable interest rates are actual market data that provides a measure of the current cost of capital, the accuracy of forecasted interest rates is at very best, problematic.

Q WHY DO YOU BELIEVE THAT THE ACCURACY OF FORECASTED INTEREST RATES IS HIGHLY PROBLEMATIC?

A Over the last several years, observable current interest rates have been a more accurate predictor of future interest rates than economists' consensus projections. Exhibit MPG-20 illustrates this point. On this exhibit, under Columns 1 and 2, I show the actual market yield at the time a projection is made for Treasury bond yields two years in the future. In Column 1, I show the actual Treasury yield and, in Column 2, I show the projected yield two years out.

As shown in Columns 1 and 2, over the last several years, Treasury yields were projected to increase relative to the actual Treasury yields at the time of the projection. In Column 4, I show what the Treasury yield actually turned out to be two years after the forecast. In Column 5, I show the actual yield change at the time of the projections relative to the projected yield change.

As shown in this exhibit, over the last several years, economists consistently have been projecting that interest rates will increase. However, as shown in Column 5, those yield projections have turned out to be overstated in almost every case. Indeed, actual Treasury yields have decreased or remained flat over the last several years, rather than increased as the economists' projections indicated. As such, current observable interest rates are just as likely to accurately predict future interest rates as are economists' projections.

Q DO YOU HAVE ANY FURTHER COMMENTS IN REGARD TO MS. BULKLEY'S INTEREST RATE PROJECTIONS?

A Yes. First, it is simply not known how much, if any, long-term interest rates will increase from current levels, or whether they have already fully accounted for the termination of the Federal Reserve's Quantitative Easing program and the increase in the Federal Funds rate. Nevertheless, I do agree that this Federal Reserve program introduced risk or uncertainty in long-term interest rate markets. Because of this uncertainty, caution should be taken in estimating TEP's current return on common equity in this case. However, as noted in the EEI quote above, the increase in short-term interest rates had no impact on longer-term yields, "which remain at historically low levels and are influenced more by the level of inflation and economic strength than by the Fed's short-term rate policy.[54]"

Second, I would note that TEP is largely shielded from significant changes in capital market costs. To the extent that interest rates ultimately increase above current levels, which may have an impact on required returns on common equity, at that point in time, TEP, like all other utilities, can file to change rates to restate its

[54] *EEI Q4 2015 Financial Update*: "Stock Performance" at 6.

authorized rate of return at the prevailing market levels. On the one hand, we can expect credit rating agencies to like this predictability and consistency in the regulatory process, and to have confidence that the Commission would recognize increases in capital market costs. Yet, on the other hand, customers deserve the protection and symmetrical treatment from the Commission, that as capital market costs decline, and stay at relatively low levels, TEP's authorized rate of return will likewise reflect those low capital market costs. This is an important balancing of interests of a utility's investors and ratepayers.

Q DID MS. BULKLEY CONSIDER ADDITIONAL BUSINESS RISKS TO JUSTIFY A RETURN ON EQUITY ABOVE THE MIDPOINT OF HER RANGE?

A Ms. Bulkley believes that TEP's regulatory environment, its substantial capital expenditure plan and risks associated with environmental regulation, relative to the proxy group will warrant a return on equity above the midpoint of her range. I disagree. Setting the return on equity above the midpoint of Ms. Bulkley's range will place an unreasonable burden on the ratepayers and should be rejected. As discussed below, TEP's relative risk is comparable to the risk of the utility companies included in the proxy group.

Q WHY DO YOU BELIEVE THAT TEP FACES RISKS THAT ARE COMPARABLE TO THE RISKS FACED BY MS. BULKLEY'S AND YOUR PROXY GROUP COMPANIES?

A As shown on my Exhibit MPG-3, the average S&P credit rating for my proxy group of BBB+ is comparable to TEP's credit rating. The relative risks discussed on pages 44-51 of Ms. Bulkley's testimony are already incorporated in the credit ratings of the

proxy group companies. S&P and other credit rating agencies go through great detail in assessing a utility's business risk and financial risk in order to evaluate their assessment of its total investment risk. Therefore, this total risk investment assessment of TEP, in comparison to a proxy group, is fully absorbed into the market's perception of TEP's risk and the proxy group fully captures the investment risk of TEP.

Q HOW DOES S&P ASSIGN CORPORATE CREDIT RATINGS FOR REGULATED UTILITIES?

A In assigning corporate credit ratings the credit rating agency considers both business and financial risks. Business risks among others include company's size and competitive position, generation portfolio, capital expenditure programs as well as a consideration of the regulatory environment, current state of the industry and the economy as whole. Specifically, S&P states:

> To determine the assessment for a corporate issuer's business risk profile, the criteria combine our assessments of industry risk, country risk, and competitive position. Cash flow/leverage analysis determines a company's financial risk profile assessment. The analysis then combines the corporate issuer's business risk profile assessment and its financial risk profile assessment to determine its anchor. In general, the analysis weighs the business risk profile more heavily for investment-grade anchors, while the financial risk profile carries more weight for speculative-grade anchors.[55]

V. FAIR VALUE

Q DID MS. BULKLEY RECOMMEND AN ROR-FVRB?

A Yes. Ms. Bulkley recommended an ROR-FVRB of 5.69%, which is developed at pages 8 and 9 of her direct testimony. This ROR-FVRB is applied to TEP's estimated

[55]Standard & Poor's RatingsDirect: "Criteria/Corporates/General: Corporate Methodology," November 19, 2013.

FVRB of $2.9 billion. The FVRB is the weighted average of an OCRB of $2.1 billion (50%) and a Replacement Cost New, Depreciated ("RCND") rate base of $3.7 billion (50%). On its Schedule A-1, TEP uses an FVRB of $2.9 billion, and fair value rate of return of 5.69% to derive its requested ROI of $165.898 million.

Q HOW IS THIS ROR-FVRB USED BY TEP TO DEVELOP ITS REVENUE REQUIREMENT IN THIS PROCEEDING?

A As developed on TEP's Schedule A-1, the ROR-FVRB is used to produce a target or ROI of $165.898 million. This operating income is then used to develop a fair value increment to the Company's ROR-OCRB of 7.34% to produce the same operating income. In order to produce the fair value ROI estimated by the Company, TEP adds a fair value increment of 0.54% to its recommended ROR-OCRB of 7.34%, and proposes to set rates to recover an operating income based on a required ROR-OCRB of 7.88%.

Q IS IT REASONABLE FOR TEP TO REQUEST A FAIR VALUE ADJUSTMENT TO ITS ROR-OCRB IN MEASURING ITS ROI FOR THIS CASE?

A No. The ROI of TEP should be based on either an original cost or fair value methodology. It is not appropriate for TEP to add an increment rate of return to the ROR-OCRB in order to support its requested ROI. Indeed, adding an increment to the traditional method of estimating an ROR-OCRB, shows that the proposed operating income of TEP is excessive.

Q WHY SHOULD THE NET OPERATING INCOME BE THE SAME USING EITHER AN ORIGINAL COST OR FAIR VALUE METHODOLOGY?

A Investors should be fairly compensated and rates should be just and reasonable using either an original cost or a fair value rate-setting methodology. In an original cost methodology, investors are compensated entirely by the allowed return on rate base. The increase in value of the assets included in rate base is not reflected in the original cost methodology. Therefore, investors are compensated for the expectation that asset values will increase over time, by applying a market-based rate of return to the original cost of assets. This provides total compensation to investors on a current basis through the rate of return.

On the other hand, in a fair value methodology, the expected escalation or growth to the value of utility assets is reflected in setting rates. Therefore, the total return to investors in a fair value methodology includes both the expected growth in the value of the assets (i.e., growth in the Fair Value Rate Base), plus the ROR-FVRB.

The primary difference between an ROR-OCRB and an ROR-FVRB relates to compensating investors for the expected investment growth. In an ROR-OCRB, the expected growth rate in asset values is included in the rate of return and investors are compensated for this growth in the utility's operating income. Conversely, in a fair value methodology, expected growth in the value of the assets is picked up in the growth to the rate base itself, and not in the rate of return.

Regardless of the methodology, however, the net operating income should be approximately the same.

Q CAN YOU PROVIDE AN ILLUSTRATION AS TO WHY THE REQUIRED RETURN COMPONENT FOR AN ROR-OCRB AND AN ROR-FVRB SHOULD BE REASONABLY COMPARABLE?

A Yes. An example is shown below in Table 10. Under the original cost methodology, if the beginning of year rate base is $100, the return is assumed to be 10%, escalation to the value of utility assets is assumed to be 3%, and the annual depreciation rate is 3%. Based on these assumptions, depreciation expense for the year would be $3, and capital expenditures are assumed to be $3.10, which was developed assuming that 3% of the rate base would be replaced, and the cost of replacement would escalate by 3% per year. The end of year rate base in this example, then, is $100.10. The current return produced on this rate base is the beginning of year rate base multiplied by the 10% rate of return, or $10. Hence, the total return on the original cost methodology is $10, or 10%.

In column 2, I show the compensation to investors using a fair value methodology. Here, again, investors' compensation is 10%. In the fair value methodology the beginning of year rate base is $100, the fair value rate of return is 7%, and the asset escalation is 3%. Depreciation expense then would be $3.10, which is the original cost depreciation expense adjusted by the growth in the value of the asset. Capital expenditures are again $3.10. Year-end rate base is $103, which reflects the 3% escalation to the value of the beginning of year rate base. In a fair value methodology, investor compensation is based on the current return of $7, appreciation in the value of rate base is $3, for a total investor return of $10, or 10%.

TABLE 10

Original Cost and Fair Value Comparison

Description	Original Cost (1)	Fair Value (2)
Beginning Rate Base	$100	$100
Rate of Return	10%	7%
Asset Escalation	3%	3%
Depreciation Expense (3%)	$3.0	$3.1
Capital Expenditures	$3.1	$3.1
Year-End Rate Base	$100.1	$103.0
Current Return	$10	$ 7
Asset Appreciation	$ 0	$ 3
Total Return	$10	$10
Total Return (%)	$10 (10%)	$10 (10%)

Q DO YOU HAVE ANY COMMENTS ON MS. BULKLEY'S DEVELOPMENT OF A 5.69% ROR-FVRB?

A Yes. If the Commission chooses to rely on Ms. Bulkley's analysis for adding a fair value increment to the ROR-OCRB, I recommend the ROR-FVRB be updated to reflect more accurate estimates of the current market cost of equity. This is performed as shown on my Exhibit MPG-21. On this exhibit, I reflect the following adjustments to Ms. Bulkley's ROR-FVRB estimate:

1. I weighted the long-term debt and common equity to reflect TEP's actual end-of-test-period capital structure weights of long-term debt and common equity, rather than TEP's proposed end-of-test-year capital structure weights. This corresponds with my proposed capital structure adjustment discussed above.

2. I then relied on a fair return on equity for original cost rate base of 9.3%, rather than the excessive 10.35% return on equity proposed by Ms. Bulkley.

3. I updated her estimate of the current risk-free rate based on Treasury bond yields to reflect current observable market data, and projected Treasury yields over the

next two years. I also updated her projected inflation rate to reflect current published projections of future inflation.

Q HOW DID YOU UPDATE MS. BULKLEY'S RISK-FREE RATE ESTIMATE BASED ON CURRENT MARKET DATA?

A I updated Ms. Bulkley's risk-free rate methodology in two ways. First, I updated Ms. Bulkley's proposed use of observable nominal yields on 30-year Treasury bonds, less a projected level of inflation. However, I relied on current observable yields on Treasury bonds and projected Treasury yields out over the next two years. This period of Treasury bond yields is likely to reflect TEP's actual capital costs during the period rates will be in effect.

In contrast, Ms. Bulkley used projected Treasury bond yields five and 10 years out. These levels of projected Treasury bond yields will not impact TEP's cost of capital when the rates are in effect, and the accuracy of the longer term projected yield is far more uncertain than current and short-term projected Treasury yields. Therefore, Treasury yield projected out five to 10 years does not reasonably reflect TEP's cost of capital in this proceeding.

I also performed an estimate of the market risk-free rate by looking at Treasury Inflation-Protected Securities ("TIPS") during the 13-week period ending May 13, 2016. This is the same time period I estimated the dividend yields in my DCF study. TIPS are securities that reflect the market's assessment of a real return on Treasury bonds in the current marketplace. TIPS are Treasury bond securities that are indexed to inflation. Interest rates on these bonds are fixed, but the par value of the bond increases annually with inflation as measured by the Consumer Price Index. TIPS are considered very low risk investments because they are Treasury bond securities, whose par value is hedged against changes in inflation.

As shown on my Exhibit MPG-22, my update to Ms. Bulkley's method of estimating a real risk-free rate implies a current real risk-free rate in the marketplace of 0.92%. This is based on a projected inflation rate of 2.1%, and an average of the current yield on 30-year Treasury bonds of 2.64%, and a projection through the third quarter of 2017 for Treasury bond yields of 3.5%. The average current and projected Treasury bond yield of 3.07% less the inflation projection of 2.13% produces a real return on Treasury investments of 0.92%.

My second estimate using a 13-week average 30-year TIPS yield also implies a real return of 0.92%. The yields on the TIPS are based on observable bond yields, relative to the interest rates paid on the TIPS over the 13-week period ending May 13, 2016. These are direct valuations of TIPS valued securities made by market participants, and reflect market participants' assessment of the risk-free rate as measured by Treasury instruments in the current market.

These two alternative methods of measuring the risk-free rate provide strong evidence that the current market risk-free rate is approximately 0.92%.

Using 50% of this real risk-free rate, or 0.46%, as proposed by Ms. Bulkley in her direct testimony on page 9, produces an ROR-FVRB of 5.00%, as developed on Exhibit MPG-21.

As developed on my Exhibit MPG-21, these adjustments will reduce Ms. Bulkley's ROR-FVRB from 5.69% down to 5.00%.

Q WITH THESE CORRECTIONS, HOW WOULD THE DEVELOPMENT OF THE ROI BE IMPACTED AS SHOWN ON TEP SCHEDULE A-1?

A As developed on my Exhibit MPG-1, the ROI proposed by TEP of $165.898 million would be reduced down to $145.696 million.

1 **Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

2 A Yes, it does.

Qualifications of Michael P. Gorman

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q PLEASE STATE YOUR OCCUPATION.

A I am a consultant in the field of public utility regulation and a Managing Principal with the firm of Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A In 1983 I received a Bachelors of Science Degree in Electrical Engineering from Southern Illinois University, and in 1986, I received a Masters Degree in Business Administration with a concentration in Finance from the University of Illinois at Springfield. I have also completed several graduate level economics courses.

In August of 1983, I accepted an analyst position with the Illinois Commerce Commission ("ICC"). In this position, I performed a variety of analyses for both formal and informal investigations before the ICC, including: marginal cost of energy, central dispatch, avoided cost of energy, annual system production costs, and working capital. In October of 1986, I was promoted to the position of Senior Analyst. In this position, I assumed the additional responsibilities of technical leader on projects, and my areas of responsibility were expanded to include utility financial modeling and financial analyses.

In 1987, I was promoted to Director of the Financial Analysis Department. In this position, I was responsible for all financial analyses conducted by the Staff. Among other things, I conducted analyses and sponsored testimony before the ICC on rate of return, financial integrity, financial modeling and related issues. I also supervised the development of all Staff analyses and testimony on these same issues. In addition, I supervised the Staff's review and recommendations to the Commission concerning utility plans to issue debt and equity securities.

In August of 1989, I accepted a position with Merrill-Lynch as a financial consultant. After receiving all required securities licenses, I worked with individual investors and small businesses in evaluating and selecting investments suitable to their requirements.

In September of 1990, I accepted a position with Drazen-Brubaker & Associates, Inc. ("DBA"). In April 1995, the firm of Brubaker & Associates, Inc. was formed. It includes most of the former DBA principals and Staff. Since 1990, I have performed various analyses and sponsored testimony on cost of capital, cost/benefits of utility mergers and acquisitions, utility reorganizations, level of operating expenses and rate base, cost of service studies, and analyses relating to industrial jobs and economic development. I also participated in a study used to revise the financial policy for the municipal utility in Kansas City, Kansas.

At BAI, I also have extensive experience working with large energy users to distribute and critically evaluate responses to requests for proposals ("RFPs") for electric, steam, and gas energy supply from competitive energy suppliers. These analyses include the evaluation of gas supply and delivery charges, cogeneration and/or combined cycle unit feasibility studies, and the evaluation of third-party asset/supply management agreements. I have participated in rate cases on rate

design and class cost of service for electric, natural gas, water and wastewater utilities. I have also analyzed commodity pricing indices and forward pricing methods for third party supply agreements, and have also conducted regional electric market price forecasts.

In addition to our main office in St. Louis, the firm also has branch offices in Phoenix, Arizona and Corpus Christi, Texas.

Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?

A Yes. I have sponsored testimony on cost of capital, revenue requirements, cost of service and other issues before the Federal Energy Regulatory Commission and numerous state regulatory commissions including: Arkansas, Arizona, California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Mississippi, Missouri, Montana, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and before the provincial regulatory boards in Alberta and Nova Scotia, Canada. I have also sponsored testimony before the Board of Public Utilities in Kansas City, Kansas; presented rate setting position reports to the regulatory board of the municipal utility in Austin, Texas, and Salt River Project, Arizona, on behalf of industrial customers; and negotiated rate disputes for industrial customers of the Municipal Electric Authority of Georgia in the LaGrange, Georgia district.

Q PLEASE DESCRIBE ANY PROFESSIONAL REGISTRATIONS OR ORGANIZATIONS TO WHICH YOU BELONG.

A I earned the designation of Chartered Financial Analyst ("CFA") from the CFA Institute. The CFA charter was awarded after successfully completing three examinations which covered the subject areas of financial accounting, economics, fixed income and equity valuation and professional and ethical conduct. I am a member of the CFA Institute's Financial Analyst Society.

\\doc\shares\prolawdocs\sdw\10255\testimony-bai\298983.docx

Tucson Electric Power Company

Development of Gross Revenue Requirement Increase

$ Thousands

Line	Description	ACC Jurisdiction Original Cost	ACC Jurisdiction RCND	ACC Jurisdiction Fair Value	Reference
1	Adjusted Rate Base	$ 2,104,678	$3,721,880	$2,913,279	Schedule A-1
2	Adjusted Operating Income	$ 98,848	$ 98,848	$ 98,848	Schedule A-1 (adjusted for interest synch)
3	Current Rate of Return	4.70%	2.66%	3.39%	Ln. 2 / Ln. 1
4	Required Operating Income	$ 145,696	$ 145,696	$ 145,696	Ln. 7 x Ln. 1
5	Weighted Average Cost of Capital	6.74%	6.74%	6.74%	Exhibit MPG-2, Ln. 3
6	Fair Value Adjustment	0.18%	-2.83%	-1.74%	Ln. 7 - Ln. 5
7	Required Rate of Return	6.92%	3.91%	5.00%	Ln. 4 / Ln. 1; Exhibit MPG-21, Ln. 7
8	Operating Income Deficiency	$ 46,849	$ 46,849	$ 46,849	Ln. 4 - Ln. 2
9	Gross Revenue Conversion Factor	1.6223	1.6223	1.6223	Schedule A-1
10	Increase in Gross Revenue Requirement	$ 76,003	$ 76,003	$ 76,003	Ln. 8 x Ln. 9

Tucson Electric Power Company

Rate of Return
(June 30, 2015)

Line	Description	Amount (1)	Weight (2)	Cost (3)	Weighted Cost (4)
1	Long-Term Debt	$ 1,521,156	51.31%	4.32%	2.22%
2	Common Equity	$ 1,443,610	48.69%	**9.30%**	4.53%
3	**Total**	**$ 2,964,766**	**100.00%**		**6.74%**

Source:
Schedule D-1.

Tucson Electric Power Company

Proxy Group

Line	Company	Credit Ratings[1] S&P (1)	Credit Ratings[1] Moody's (2)	2015 Common Equity Ratios SNL[2] (3)	2015 Common Equity Ratios Value Line[3] (4)	EEI Category Regulated/Mostly Regulated[4] (5)
1	ALLETE, Inc.	BBB+	A3	53.3%	53.7%	Regulated
2	Alliant Energy Corporation	A-	A3	46.5%	49.5%	Regulated
3	Ameren Corporation	BBB+	Baa1	47.4%	49.7%	Regulated
4	American Electric Power Company, Inc.	BBB	Baa1	46.3%	50.0%	Regulated
5	Avista Corporation	BBB	Baa1	46.9%	50.0%	Regulated
6	CenterPoint Energy, Inc.	A-	Baa1	28.3%	30.5%	Mostly Regulated
7	CMS Energy Corporation	BBB+	Baa2	29.3%	31.4%	Regulated
8	Consolidated Edison, Inc.	A-	A3	47.7%	51.5%	Regulated
9	DTE Energy Company	BBB+	A3	47.3%	50.0%	Regulated
10	El Paso Electric Company	BBB	Baa1	44.6%	47.3%	Regulated
11	Entergy Corporation	BBB	Baa3	39.5%	40.8%	Regulated
12	Eversource Energy	A	Baa1	50.0%	53.0%	Regulated
13	FirstEnergy Corp.	BBB-	Baa3	36.1%	39.5%	Mostly Regulated
14	Great Plains Energy Inc.	BBB+	Baa2	46.5%	49.1%	Regulated
15	IDACORP, Inc.	BBB	Baa1	54.0%	54.4%	Regulated
16	NorthWestern Corporation	BBB	A3	44.0%	46.9%	Regulated
17	OGE Energy Corp.	A-	A3	54.8%	55.7%	Regulated
18	PG&E Corporation	BBB	Baa1	48.8%	50.4%	Regulated
19	Pinnacle West Capital Corporation	A-	A3	53.7%	57.0%	Regulated
20	PNM Resources, Inc.	BBB+	Baa3	40.6%	45.6%	Regulated
21	Portland General Electric Company	BBB	A3	50.7%	52.2%	Regulated
22	PPL Corporation	A-	Baa2	33.2%	34.8%	Mostly Regulated
23	Public Service Enterprise Group Incorporated	BBB+	Baa2	56.8%	59.5%	Mostly Regulated
24	SCANA Corporation	BBB+	Baa3	45.5%	47.5%	Mostly Regulated
25	Sempra Energy	BBB+	Baa1	43.3%	47.3%	Mostly Regulated
26	Vectren Corporation	A-	N/A	48.3%	49.4%	Mostly Regulated
27	WEC Energy Group, Inc.	A-	A3	45.4%	48.6%	Regulated
28	Westar Energy, Inc.	BBB+	Baa1	50.1%	49.0%	Regulated
29	Xcel Energy Inc.	A-	A3	43.3%	45.9%	Regulated
30	**Average**	**BBB+**	**Baa1**	**45.6%**	**47.9%**	**Regulated**
31	**Tucson Electric Power Company**	**BBB+[5]**	**A3[5]**		**48.7%[6]**	

Sources:

[1] SNL Financial, Long-term Issuer Ratings, Downloaded on May 13, 2016.

[2] SNL Financial, Downloaded on May 13, 2016.

[3] *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.

[4] www.eei.org Edison Electric Institute, 2015 Q4 - Financial Updates.

[5] Bulkley direct at 20.

[6] Grant direct at 11.

Tucson Electric Power Company

Consensus Analysts' Growth Rates

Line	Company	Zacks Estimated Growth %[1] (1)	Zacks Number of Estimates (2)	SNL Estimated Growth %[2] (3)	SNL Number of Estimates (4)	Reuters Estimated Growth %[3] (5)	Reuters Number of Estimates (6)	Average of Growth Rates (7)
1	ALLETE, Inc.	4.50%	N/A	4.50%	2	3.00%	1	4.00%
2	Alliant Energy Corporation	6.10%	N/A	6.80%	3	6.65%	2	6.52%
3	Ameren Corporation	6.70%	N/A	7.00%	2	7.10%	1	6.93%
4	American Electric Power Company, Inc.	4.80%	N/A	3.50%	4	4.07%	3	4.12%
5	Avista Corporation	5.00%	N/A	5.00%	1	NA	NA	5.00%
6	CenterPoint Energy, Inc.	5.20%	N/A	4.10%	4	5.39%	4	4.90%
7	CMS Energy Corporation	6.40%	N/A	6.80%	4	7.24%	3	6.81%
8	Consolidated Edison, Inc.	2.30%	N/A	2.80%	4	2.42%	4	2.51%
9	DTE Energy Company	5.80%	N/A	5.60%	5	5.35%	4	5.58%
10	El Paso Electric Company	6.70%	N/A	N/A	N/A	NA	NA	6.70%
11	Entergy Corporation	- 2.30%	N/A	0.50%	3	- 2.37%	4	0.50%
12	Eversource Energy	6.30%	N/A	6.60%	4	6.01%	3	6.30%
13	FirstEnergy Corp.	- 1.00%	N/A	0.40%	4	- 2.51%	4	0.40%
14	Great Plains Energy Inc.	6.60%	N/A	5.60%	4	7.10%	3	6.43%
15	IDACORP, Inc.	4.00%	N/A	N/A	N/A	NA	NA	4.00%
16	NorthWestern Corporation	5.00%	N/A	5.00%	3	5.00%	2	5.00%
17	OGE Energy Corp.	5.20%	N/A	5.50%	3	4.30%	2	5.00%
18	PG&E Corporation	4.40%	N/A	5.60%	3	6.02%	4	5.34%
19	Pinnacle West Capital Corporation	4.00%	N/A	4.30%	4	3.60%	3	3.97%
20	PNM Resources, Inc.	7.60%	N/A	7.50%	3	8.76%	2	7.95%
21	Portland General Electric Company	6.40%	N/A	6.10%	4	6.50%	4	6.33%
22	PPL Corporation	4.60%	N/A	7.50%	5	4.23%	4	5.44%
23	Public Service Enterprise Group Incorporated	2.60%	N/A	2.30%	4	1.63%	4	2.18%
24	SCANA Corporation	5.30%	N/A	5.60%	1	4.80%	1	5.23%
25	Sempra Energy	8.00%	N/A	11.00%	2	7.81%	3	8.94%
26	Vectren Corporation	5.30%	N/A	5.00%	2	5.00%	2	5.10%
27	WEC Energy Group, Inc.	6.30%	N/A	6.30%	3	6.77%	3	6.46%
28	Westar Energy, Inc.	5.00%	N/A	4.90%	3	4.93%	3	4.94%
29	Xcel Energy Inc.	5.20%	N/A	5.00%	4	5.27%	3	5.16%
30	**Average**	**5.38%**	**N/A**	**5.21%**	**3**	**5.37%**	**3**	**5.09%**

Sources:

[1] Zacks Elite, http://www.zackselite.com/, downloaded on May 13, 2016.

[2] SNL Interactive, http://www.snl.com/, downloaded on May 13, 2016.

[3] Reuters, http://www.reuters.com/, downloaded on May 13, 2016.

Tucson Electric Power Company

Constant Growth DCF Model
(Consensus Analysts' Growth Rates)

Line	Company	13-Week AVG Stock Price[1] (1)	Analysts' Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	ALLETE, Inc.	$55.38	4.00%	$2.08	3.91%	7.91%
2	Alliant Energy Corporation	$71.09	6.52%	$2.35	3.52%	10.04%
3	Ameren Corporation	$48.00	6.93%	$1.70	3.79%	10.72%
4	American Electric Power Company, Inc.	$64.11	4.12%	$2.24	3.64%	7.76%
5	Avista Corporation	$39.54	5.00%	$1.37	3.64%	8.64%
6	CenterPoint Energy, Inc.	$20.45	4.90%	$1.03	5.28%	10.18%
7	CMS Energy Corporation	$40.84	6.81%	$1.24	3.24%	10.06%
8	Consolidated Edison, Inc.	$73.61	2.51%	$2.68	3.73%	6.24%
9	DTE Energy Company	$87.84	5.58%	$2.92	3.51%	9.09%
10	El Paso Electric Company	$43.73	6.70%	$1.18	2.88%	9.58%
11	Entergy Corporation	$75.72	0.50%	$3.40	4.51%	5.01%
12	Eversource Energy	$56.44	6.30%	$1.78	3.35%	9.66%
13	FirstEnergy Corp.	$34.60	0.40%	$1.44	4.18%	4.58%
14	Great Plains Energy Inc.	$30.85	6.43%	$1.05	3.62%	10.06%
15	IDACORP, Inc.	$72.79	4.00%	$2.04	2.91%	6.91%
16	NorthWestern Corporation	$59.40	5.00%	$2.00	3.54%	8.54%
17	OGE Energy Corp.	$27.81	5.00%	$1.10	4.15%	9.15%
18	PG&E Corporation	$57.93	5.34%	$1.82	3.31%	8.65%
19	Pinnacle West Capital Corporation	$71.92	3.97%	$2.50	3.61%	7.58%
20	PNM Resources, Inc.	$32.61	7.95%	$0.88	2.91%	10.87%
21	Portland General Electric Company	$39.12	6.33%	$1.20	3.26%	9.60%
22	PPL Corporation	$36.94	5.44%	$1.52	4.34%	9.78%
23	Public Service Enterprise Group Incorporated	$45.18	2.18%	$1.56	3.53%	5.70%
24	SCANA Corporation	$67.84	5.23%	$2.18	3.38%	8.61%
25	Sempra Energy	$101.35	8.94%	$3.02	3.25%	12.18%
26	Vectren Corporation	$48.47	5.10%	$1.60	3.47%	8.57%
27	WEC Energy Group, Inc.	$58.08	6.46%	$1.98	3.63%	10.09%
28	Westar Energy, Inc.	$48.50	4.94%	$1.52	3.29%	8.23%
29	Xcel Energy Inc.	$40.40	5.16%	$1.36	3.54%	8.70%
30	**Average**	**$53.47**	**5.09%**	**$1.82**	**3.62%**	**8.71%**
31	**Median**					**8.70%**

Sources:
[1] SNL Financial, Downloaded on May 16, 2016.
[2] Exhibit MPG-4.
[3] *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.

Tucson Electric Power Company

Payout Ratios

Line	Company	Dividends Per Share		Earnings Per Share		Payout Ratio	
		2015 (1)	Projected (2)	2015 (3)	Projected (4)	2015 (5)	Projected (6)
1	ALLETE, Inc.	$2.02	$2.40	$3.38	$3.75	59.76%	64.00%
2	Alliant Energy Corporation	$2.20	$3.00	$3.37	$4.70	65.28%	63.83%
3	Ameren Corporation	$1.66	$2.05	$2.38	$3.25	69.75%	63.08%
4	American Electric Power Company, Inc.	$2.15	$2.75	$3.60	$4.25	59.72%	64.71%
5	Avista Corporation	$1.32	$1.60	$1.89	$2.50	69.84%	64.00%
6	CenterPoint Energy, Inc.	$0.99	$1.19	$1.08	$1.35	91.67%	88.15%
7	CMS Energy Corporation	$1.16	$1.60	$1.89	$2.50	61.38%	64.00%
8	Consolidated Edison, Inc.	$2.60	$3.00	$3.95	$4.50	65.82%	66.67%
9	DTE Energy Company	$2.84	$3.70	$4.44	$5.75	63.96%	64.35%
10	El Paso Electric Company	$1.17	$1.50	$2.03	$2.50	57.64%	60.00%
11	Entergy Corporation	$3.34	$4.00	$6.00	$6.75	55.67%	59.26%
12	Eversource Energy	$1.67	$2.20	$2.76	$3.75	60.51%	58.67%
13	FirstEnergy Corp.	$1.44	$1.60	$2.00	$3.25	72.00%	49.23%
14	Great Plains Energy Inc.	$1.00	$1.30	$1.37	$2.00	72.99%	65.00%
15	IDACORP, Inc.	$1.92	$2.70	$3.87	$4.50	49.61%	60.00%
16	NorthWestern Corporation	$1.92	$2.32	$2.90	$4.00	66.21%	58.00%
17	OGE Energy Corp.	$1.05	$1.65	$1.71	$2.25	61.40%	73.33%
18	PG&E Corporation	$1.82	$2.35	$2.00	$4.50	91.00%	52.22%
19	Pinnacle West Capital Corporation	$2.44	$3.10	$3.92	$4.75	62.24%	65.26%
20	PNM Resources, Inc.	$0.80	$1.30	$1.64	$2.35	48.78%	55.32%
21	Portland General Electric Company	$1.18	$1.60	$2.04	$2.75	57.84%	58.18%
22	PPL Corporation	$1.50	$1.76	$2.37	$3.00	63.29%	58.67%
23	Public Service Enterprise Group Incorporated	$1.56	$2.00	$3.15	$3.50	49.52%	57.14%
24	SCANA Corporation	$2.18	$2.60	$3.85	$4.75	56.62%	54.74%
25	Sempra Energy	$2.80	$3.90	$5.23	$8.25	53.54%	47.27%
26	Vectren Corporation	$1.54	$1.95	$2.39	$3.40	64.44%	57.35%
27	WEC Energy Group, Inc.	$1.74	$2.40	$2.34	$3.75	74.36%	64.00%
28	Westar Energy, Inc.	$1.44	$1.84	$2.09	$3.10	68.90%	59.35%
29	Xcel Energy Inc.	$1.28	$1.70	$2.10	$2.75	60.95%	61.82%
30	**Average**	**$1.75**	**$2.24**	**$2.82**	**$3.74**	**63.96%**	**61.30%**

Source:
The Value Line Investment Survey, February 19, March 18, and April 29, 2016.

Tucson Electric Power Company

Sustainable Growth Rate

Line	Company	3 to 5 Year Projections: Dividends Per Share (1)	Earnings Per Share (2)	Book Value Per Share (3)	Book Value Growth (4)	ROE (5)	Adjustment Factor (6)	Adjusted ROE (7)	Payout Ratio (8)	Retention Rate (9)	Internal Growth Rate (10)	Sustainable Growth Rate (11)
1	ALLETE, Inc.	$2.40	$3.75	$43.25	3.13%	8.67%	1.02	8.80%	64.00%	36.00%	3.17%	3.48%
2	Alliant Energy Corporation	$3.00	$4.70	$40.00	2.95%	11.75%	1.01	11.92%	63.83%	36.17%	4.31%	4.55%
3	Ameren Corporation	$2.05	$3.25	$34.00	3.50%	9.56%	1.02	9.72%	63.08%	36.92%	3.59%	3.59%
4	American Electric Power Company, Inc.	$2.75	$4.25	$44.25	3.95%	9.60%	1.02	9.79%	64.71%	35.29%	3.46%	3.69%
5	Avista Corporation	$1.60	$2.50	$28.50	3.05%	8.77%	1.01	8.90%	64.00%	36.00%	3.21%	3.79%
6	CenterPoint Energy, Inc.	$1.19	$1.35	$9.50	3.37%	14.21%	1.02	14.45%	88.15%	11.85%	1.71%	3.11%
7	CMS Energy Corporation	$1.60	$2.50	$19.25	6.26%	12.99%	1.03	13.38%	64.00%	36.00%	4.82%	5.91%
8	Consolidated Edison, Inc.	$3.00	$4.50	$52.25	3.38%	8.61%	1.02	8.76%	66.67%	33.33%	2.92%	2.92%
9	DTE Energy Company	$3.70	$5.75	$60.25	4.31%	9.54%	1.02	9.74%	64.35%	35.65%	3.47%	3.88%
10	El Paso Electric Company	$1.50	$2.50	$29.50	3.26%	8.47%	1.02	8.61%	60.00%	40.00%	3.44%	3.61%
11	Entergy Corporation	$4.00	$6.75	$64.25	4.37%	10.51%	1.02	10.73%	59.26%	40.74%	4.37%	4.37%
12	Eversource Energy	$2.20	$3.75	$38.75	3.58%	9.68%	1.02	9.85%	58.67%	41.33%	4.07%	4.26%
13	FirstEnergy Corp.	$1.60	$3.25	$37.50	4.46%	8.67%	1.02	8.86%	49.23%	50.77%	4.50%	4.58%
14	Great Plains Energy Inc.	$1.30	$2.00	$27.50	3.04%	7.27%	1.01	7.38%	65.00%	35.00%	2.58%	2.63%
15	IDACORP, Inc.	$2.70	$4.50	$49.75	4.01%	9.05%	1.02	9.22%	60.00%	40.00%	3.69%	3.76%
16	NorthWestern Corporation	$2.32	$4.00	$39.50	3.52%	10.13%	1.02	10.30%	58.00%	42.00%	4.33%	4.69%
17	OGE Energy Corp.	$1.65	$2.25	$19.75	3.47%	11.39%	1.02	11.59%	73.33%	26.67%	3.09%	3.23%
18	PG&E Corporation	$2.35	$4.50	$44.25	5.60%	10.17%	1.03	10.45%	52.22%	47.78%	4.99%	5.77%
19	Pinnacle West Capital Corporation	$3.10	$4.75	$48.75	3.37%	9.74%	1.02	9.91%	65.26%	34.74%	3.44%	3.72%
20	PNM Resources, Inc.	$1.30	$2.35	$25.50	4.20%	9.22%	1.02	9.41%	55.32%	44.68%	4.20%	4.24%
21	Portland General Electric Company	$1.60	$2.75	$31.00	4.04%	8.87%	1.02	9.05%	58.18%	41.82%	3.78%	3.78%
22	PPL Corporation	$1.76	$3.00	$20.25	6.59%	14.81%	1.03	15.29%	58.67%	41.33%	6.32%	6.95%
23	Public Service Enterprise Group Incorporated	$2.00	$3.50	$32.75	4.97%	10.69%	1.02	10.95%	57.14%	42.86%	4.69%	4.69%
24	SCANA Corporation	$2.60	$4.75	$48.25	5.20%	9.84%	1.03	10.09%	54.74%	45.26%	4.57%	5.22%
25	Sempra Energy	$3.90	$8.25	$61.25	5.19%	13.47%	1.03	13.81%	47.27%	52.73%	7.28%	8.04%
26	Vectren Corporation	$1.95	$3.40	$26.75	5.63%	12.71%	1.03	13.06%	57.35%	42.65%	5.57%	6.45%
27	WEC Energy Group, Inc.	$2.40	$3.75	$32.75	3.62%	11.45%	1.02	11.65%	64.00%	36.00%	4.20%	4.20%
28	Westar Energy, Inc.	$1.84	$3.10	$29.80	2.78%	10.40%	1.01	10.55%	59.35%	40.65%	4.29%	6.09%
29	Xcel Energy Inc.	$1.70	$2.75	$25.50	4.07%	10.78%	1.02	11.00%	61.82%	38.18%	4.20%	4.21%
30	**Average**	**$2.24**	**$3.74**	**$36.71**	**4.10%**	**10.38%**	**1.02**	**10.59%**	**61.30%**	**38.70%**	**4.08%**	**4.46%**

Sources and Notes:
Cols. (1), (2) and (3): *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.
Col. (4): [Col. (3) / Page 2 Col. (2)] ^ (1/5) - 1.
Col. (5): Col. (2) / Col. (3).
Col. (6): [2 * (1 + Col. (4))] / (2 + Col. (4)).
Col. (7): Col. (6) * Col. (5).
Col. (8): Col. (1) / Col. (2).
Col. (9): 1 - Col. (8).
Col. (10): Col. (9) * Col. (7).
Col. (11): Col. (10) + Page 2 Col. (9).

Tucson Electric Power Company

Sustainable Growth Rate

Line	Company	13-Week Average Stock Price[1] (1)	2015 Book Value Per Share[2] (2)	Market to Book Ratio (3)	Common Shares Outstanding (in Millions)[2] 2014 (4)	Common Shares Outstanding (in Millions)[2] 3-5 Years (5)	Growth (6)	S Factor[3] (7)	V Factor[4] (8)	S * V (9)
1	ALLETE, Inc.	$55.38	$37.07	1.49	49.10	51.00	0.63%	0.95%	33.07%	0.31%
2	Alliant Energy Corporation	$71.09	$34.59	2.06	113.46	115.00	0.22%	0.46%	51.34%	0.24%
3	Ameren Corporation	$48.00	$28.63	1.68	242.63	242.63	0.00%	0.00%	40.35%	0.00%
4	American Electric Power Company, Inc.	$64.11	$36.45	1.76	491.00	500.00	0.30%	0.53%	43.14%	0.23%
5	Avista Corporation	$39.54	$24.53	1.61	62.31	66.00	0.96%	1.55%	37.97%	0.59%
6	CenterPoint Energy, Inc.	$20.45	$8.05	2.54	431.00	455.00	0.91%	2.30%	60.63%	1.40%
7	CMS Energy Corporation	$40.84	$14.21	2.87	277.16	287.00	0.58%	1.68%	65.21%	1.09%
8	Consolidated Edison, Inc.	$73.61	$44.25	1.66	293.00	293.00	0.00%	0.00%	39.89%	0.00%
9	DTE Energy Company	$87.84	$48.80	1.80	179.50	185.00	0.50%	0.91%	44.45%	0.40%
10	El Paso Electric Company	$43.73	$25.13	1.74	40.44	41.00	0.23%	0.40%	42.53%	0.17%
11	Entergy Corporation	$75.72	$51.89	1.46	178.39	178.40	0.00%	0.00%	31.47%	0.00%
12	Eversource Energy	$56.44	$32.50	1.74	318.00	323.00	0.26%	0.45%	42.41%	0.19%
13	FirstEnergy Corp.	$34.60	$30.15	1.15	424.00	439.00	0.58%	0.67%	12.85%	0.09%
14	Great Plains Energy Inc.	$30.85	$23.68	1.30	154.40	155.75	0.15%	0.19%	23.25%	0.04%
15	IDACORP, Inc.	$72.79	$40.88	1.78	50.34	50.60	0.09%	0.15%	43.84%	0.07%
16	NorthWestern Corporation	$59.40	$33.22	1.79	48.17	49.50	0.45%	0.81%	44.08%	0.36%
17	OGE Energy Corp.	$27.81	$16.65	1.67	200.00	202.50	0.21%	0.35%	40.14%	0.14%
18	PG&E Corporation	$57.93	$33.69	1.72	492.03	525.00	1.09%	1.87%	41.84%	0.78%
19	Pinnacle West Capital Corporation	$71.92	$41.30	1.74	110.98	113.50	0.37%	0.65%	42.58%	0.28%
20	PNM Resources, Inc.	$32.61	$20.76	1.57	79.65	80.00	0.07%	0.11%	36.33%	0.04%
21	Portland General Electric Company	$39.12	$25.43	1.54	89.79	89.80	0.00%	0.00%	34.99%	0.00%
22	PPL Corporation	$36.94	$14.72	2.51	673.86	691.00	0.42%	1.05%	60.15%	0.63%
23	Public Service Enterprise Group Incorporated	$45.18	$25.70	1.76	506.00	506.00	0.00%	0.00%	43.12%	0.00%
24	SCANA Corporation	$67.84	$37.45	1.81	143.00	150.00	0.80%	1.45%	44.80%	0.65%
25	Sempra Energy	$101.35	$47.56	2.13	248.30	258.50	0.67%	1.43%	53.07%	0.76%
26	Vectren Corporation	$48.47	$20.34	2.38	82.80	86.00	0.63%	1.51%	58.04%	0.88%
27	WEC Energy Group, Inc.	$58.08	$27.42	2.12	315.68	315.70	0.00%	0.00%	52.79%	0.00%
28	Westar Energy, Inc.	$48.50	$25.98	1.87	141.35	160.00	2.09%	3.90%	46.43%	1.81%
29	Xcel Energy Inc.	$40.40	$20.89	1.93	507.54	508.00	0.02%	0.03%	48.29%	0.01%
30	**Average**	**$53.47**	**$30.07**	**1.83**	**239.44**	**245.44**	**0.42%**	**0.81%**	**43.41%**	**0.39%**

Sources and Notes:

[1] SNL Financial, Downloaded on May 16, 2016.

[2] *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.

[3] Expected Growth in the Number of Shares, Column (3) * Column (6).

[4] Expected Profit of Stock Investment, [1 - 1 / Column (3)].

Tucson Electric Power Company

Constant Growth DCF Model
(Sustainable Growth Rate)

Line	Company	13-Week AVG Stock Price[1] (1)	Sustainable Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	ALLETE, Inc.	$55.38	3.48%	$2.08	3.89%	7.37%
2	Alliant Energy Corporation	$71.09	4.55%	$2.35	3.46%	8.01%
3	Ameren Corporation	$48.00	3.59%	$1.70	3.67%	7.26%
4	American Electric Power Company, Inc.	$64.11	3.69%	$2.24	3.62%	7.31%
5	Avista Corporation	$39.54	3.79%	$1.37	3.60%	7.39%
6	CenterPoint Energy, Inc.	$20.45	3.11%	$1.03	5.19%	8.30%
7	CMS Energy Corporation	$40.84	5.91%	$1.24	3.22%	9.13%
8	Consolidated Edison, Inc.	$73.61	2.92%	$2.68	3.75%	6.67%
9	DTE Energy Company	$87.84	3.88%	$2.92	3.45%	7.33%
10	El Paso Electric Company	$43.73	3.61%	$1.18	2.80%	6.41%
11	Entergy Corporation	$75.72	4.37%	$3.40	4.69%	9.06%
12	Eversource Energy	$56.44	4.26%	$1.78	3.29%	7.55%
13	FirstEnergy Corp.	$34.60	4.58%	$1.44	4.35%	8.93%
14	Great Plains Energy Inc.	$30.85	2.63%	$1.05	3.49%	6.12%
15	IDACORP, Inc.	$72.79	3.76%	$2.04	2.91%	6.66%
16	NorthWestern Corporation	$59.40	4.69%	$2.00	3.52%	8.21%
17	OGE Energy Corp.	$27.81	3.23%	$1.10	4.08%	7.31%
18	PG&E Corporation	$57.93	5.77%	$1.82	3.32%	9.10%
19	Pinnacle West Capital Corporation	$71.92	3.72%	$2.50	3.61%	7.32%
20	PNM Resources, Inc.	$32.61	4.24%	$0.88	2.81%	7.06%
21	Portland General Electric Company	$39.12	3.78%	$1.20	3.18%	6.97%
22	PPL Corporation	$36.94	6.95%	$1.52	4.40%	11.35%
23	Public Service Enterprise Group Incorporated	$45.18	4.69%	$1.56	3.61%	8.31%
24	SCANA Corporation	$67.84	5.22%	$2.18	3.38%	8.60%
25	Sempra Energy	$101.35	8.04%	$3.02	3.22%	11.26%
26	Vectren Corporation	$48.47	6.45%	$1.60	3.51%	9.96%
27	WEC Energy Group, Inc.	$58.08	4.20%	$1.98	3.55%	7.75%
28	Westar Energy, Inc.	$48.50	6.09%	$1.52	3.33%	9.42%
29	Xcel Energy Inc.	$40.40	4.21%	$1.36	3.51%	7.72%
30	**Average**	**$53.47**	**4.46%**	**$1.82**	**3.60%**	**8.06%**
31	**Median**					**7.72%**

Sources:

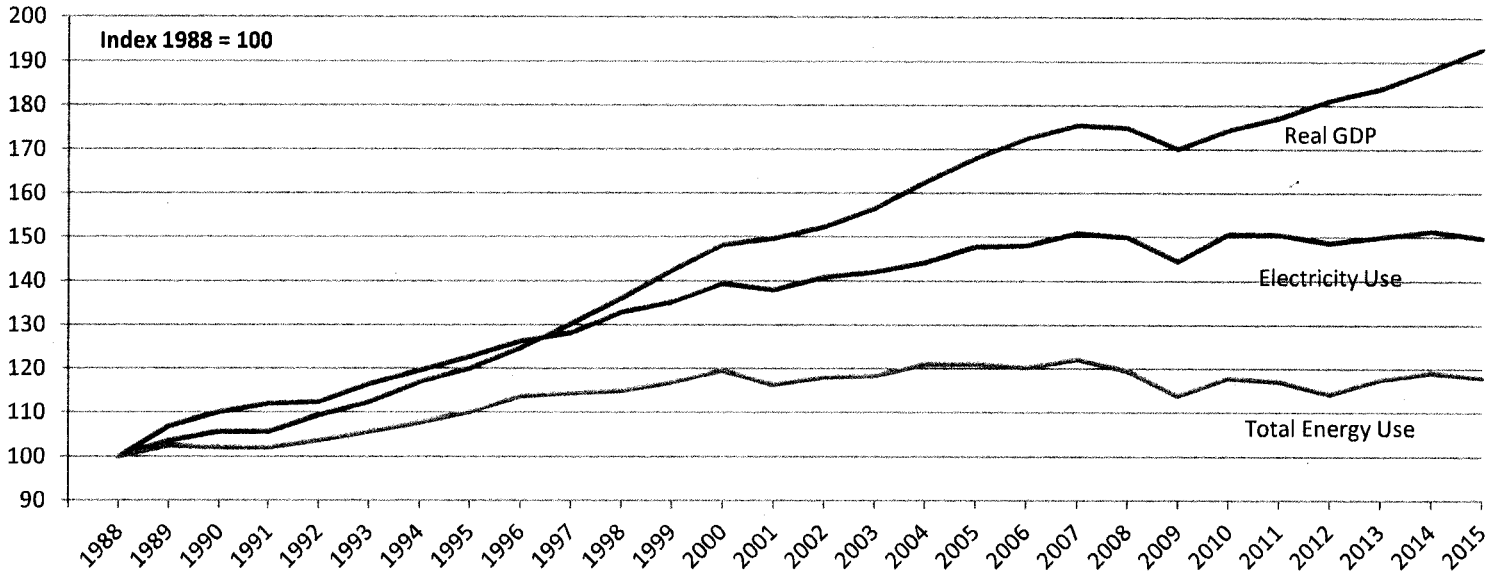
[1] SNL Financial, Downloaded on May 16, 2016.

[2] Exhibit MPG-7, page 1.

[3] *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.

Tucson Electric Power Company

Electricity Sales Are Linked to U.S. Economic Growth



Note:
1988 represents the base year. Graph depicts increases or decreases from the base year.

Sources:
U.S. Energy Information Administration
Federal Reserve Bank of St. Louis

Tucson Electric Power Company

Multi-Stage Growth DCF Model

Line	Company	13-Week AVG Stock Price[1] (1)	Annualized Dividend[2] (2)	First Stage Growth[3] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[4] (9)	Multi-Stage Growth DCF (10)
1	ALLETE, Inc.	$55.38	$2.08	4.00%	4.03%	4.07%	4.10%	4.13%	4.17%	4.20%	8.06%
2	Alliant Energy Corporation	$71.09	$2.35	6.52%	6.13%	5.74%	5.36%	4.97%	4.59%	4.20%	8.19%
3	Ameren Corporation	$48.00	$1.70	6.93%	6.48%	6.02%	5.57%	5.11%	4.66%	4.20%	8.58%
4	American Electric Power Company, Inc.	$64.11	$2.24	4.12%	4.14%	4.15%	4.16%	4.17%	4.19%	4.20%	7.82%
5	Avista Corporation	$39.54	$1.37	5.00%	4.87%	4.73%	4.60%	4.47%	4.33%	4.20%	8.00%
6	CenterPoint Energy, Inc.	$20.45	$1.03	4.90%	4.78%	4.66%	4.55%	4.43%	4.32%	4.20%	9.68%
7	CMS Energy Corporation	$40.84	$1.24	6.81%	6.38%	5.94%	5.51%	5.07%	4.64%	4.20%	7.93%
8	Consolidated Edison, Inc.	$73.61	$2.68	2.51%	2.79%	3.07%	3.35%	3.64%	3.92%	4.20%	7.59%
9	DTE Energy Company	$87.84	$2.92	5.58%	5.35%	5.12%	4.89%	4.66%	4.43%	4.20%	7.98%
10	El Paso Electric Company	$43.73	$1.18	6.70%	6.28%	5.87%	5.45%	5.03%	4.62%	4.20%	7.50%
11	Entergy Corporation	$75.72	$3.40	0.50%	1.12%	1.73%	2.35%	2.97%	3.58%	4.20%	7.88%
12	Eversource Energy	$56.44	$1.78	6.30%	5.95%	5.60%	5.25%	4.90%	4.55%	4.20%	7.95%
13	FirstEnergy Corp.	$34.60	$1.44	0.40%	1.03%	1.67%	2.30%	2.93%	3.57%	4.20%	7.58%
14	Great Plains Energy Inc.	$30.85	$1.05	6.43%	6.06%	5.69%	5.32%	4.94%	4.57%	4.20%	8.28%
15	IDACORP, Inc.	$72.79	$2.04	4.00%	4.03%	4.07%	4.10%	4.13%	4.17%	4.20%	7.07%
16	NorthWestern Corporation	$59.40	$2.00	5.00%	4.87%	4.73%	4.60%	4.47%	4.33%	4.20%	7.89%
17	OGE Energy Corp.	$27.81	$1.10	5.00%	4.87%	4.73%	4.60%	4.47%	4.33%	4.20%	8.53%
18	PG&E Corporation	$57.93	$1.82	5.34%	5.15%	4.96%	4.77%	4.58%	4.39%	4.20%	7.72%
19	Pinnacle West Capital Corporation	$71.92	$2.50	3.97%	4.01%	4.04%	4.08%	4.12%	4.16%	4.20%	7.76%
20	PNM Resources, Inc.	$32.61	$0.88	7.95%	7.33%	6.70%	6.08%	5.45%	4.83%	4.20%	7.77%
21	Portland General Electric Company	$39.12	$1.20	6.33%	5.98%	5.62%	5.27%	4.91%	4.56%	4.20%	7.86%
22	PPL Corporation	$36.94	$1.52	5.44%	5.24%	5.03%	4.82%	4.61%	4.41%	4.20%	8.83%
23	Public Service Enterprise Group Incorporate	$45.18	$1.56	2.18%	2.51%	2.85%	3.19%	3.53%	3.86%	4.20%	7.34%
24	SCANA Corporation	$67.84	$2.18	5.23%	5.06%	4.89%	4.72%	4.54%	4.37%	4.20%	7.77%
25	Sempra Energy	$101.35	$3.02	8.94%	8.15%	7.36%	6.57%	5.78%	4.99%	4.20%	8.37%
26	Vectren Corporation	$48.47	$1.60	5.10%	4.95%	4.80%	4.65%	4.50%	4.35%	4.20%	7.84%
27	WEC Energy Group, Inc.	$58.08	$1.98	6.46%	6.08%	5.70%	5.33%	4.95%	4.58%	4.20%	8.29%
28	Westar Energy, Inc.	$48.50	$1.52	4.94%	4.82%	4.70%	4.57%	4.45%	4.32%	4.20%	7.62%
29	Xcel Energy Inc.	$40.40	$1.36	5.16%	5.00%	4.84%	4.68%	4.52%	4.36%	4.20%	7.93%
30	**Average**	**$53.47**	**$1.82**	**5.09%**	**4.95%**	**4.80%**	**4.65%**	**4.50%**	**4.35%**	**4.20%**	**7.99%**
31	**Median**										**7.89%**

Sources:

[1] SNL Financial, Downloaded on May 16, 2016.

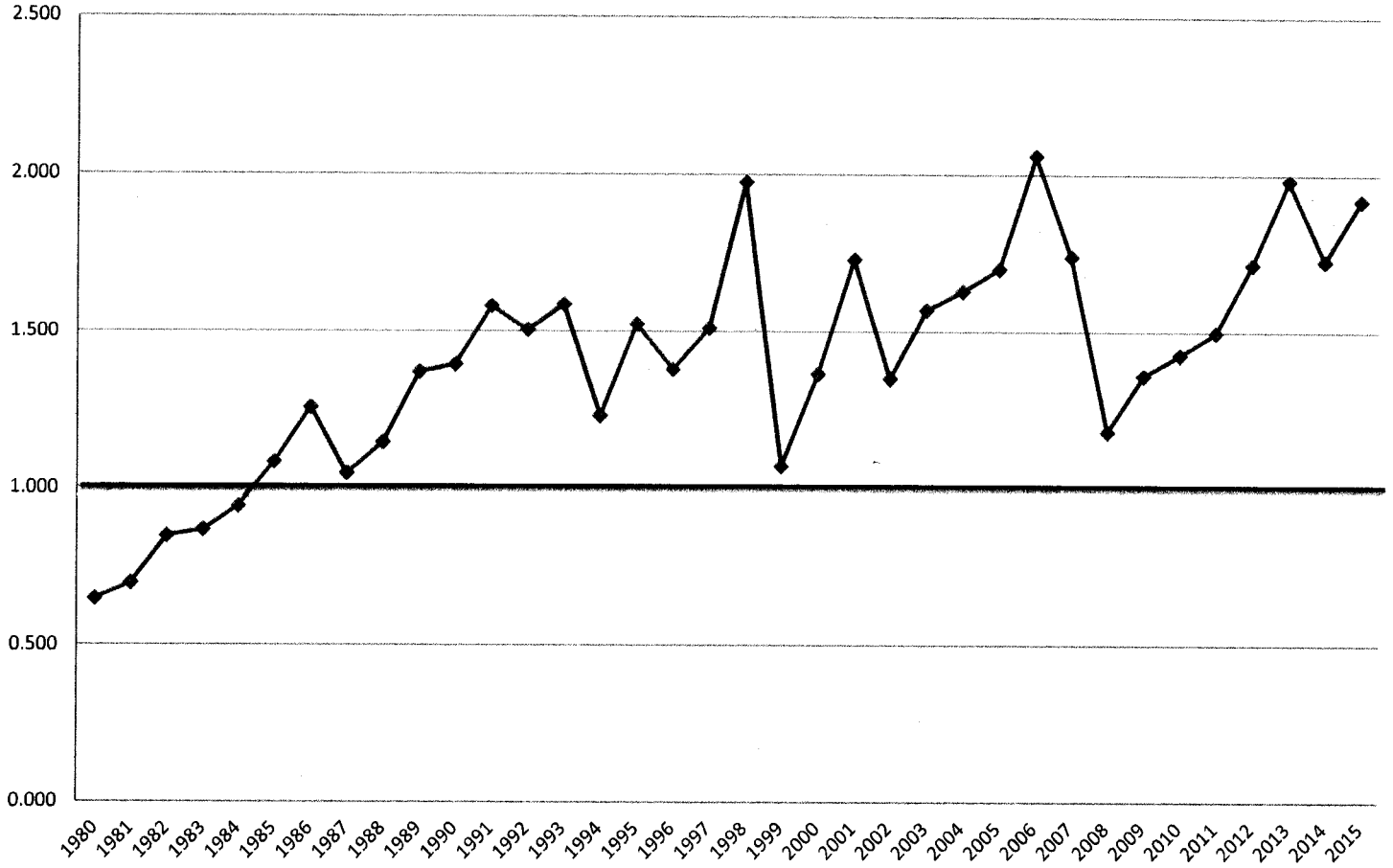
[2] *The Value Line Investment Survey*, February 19, March 18, and April 29, 2016.

[3] Exhibit MPG-5.

[4] Blue Chip Economic Indicators, March 10, 2016 at 14.

Tucson Electric Power Company

Common Stock Market/Book Ratio



Source:
1980 - 2000: Mergent Public Utility Manual.
2001 - 2015: AUS Utility Reports, various dates.

Tucson Electric Power Company

Equity Risk Premium - Treasury Bond

Line	Year	Authorized Electric Returns[1] (1)	30 yr. Treasury Bond Yield[2] (2)	Indicated Risk Premium (3)	Rolling 5 - Year Average (4)	Rolling 10 - Year Average (5)
1	1986	13.93%	7.80%	6.13%		
2	1987	12.99%	8.58%	4.41%		
3	1988	12.79%	8.96%	3.83%		
4	1989	12.97%	8.45%	4.52%		
5	1990	12.70%	8.61%	4.09%	4.60%	
6	1991	12.55%	8.14%	4.41%	4.25%	
7	1992	12.09%	7.67%	4.42%	4.26%	
8	1993	11.41%	6.60%	4.81%	4.45%	
9	1994	11.34%	7.37%	3.97%	4.34%	
10	1995	11.55%	6.88%	4.67%	4.46%	4.53%
11	1996	11.39%	6.70%	4.69%	4.51%	4.38%
12	1997	11.40%	6.61%	4.79%	4.59%	4.42%
13	1998	11.66%	5.58%	6.08%	4.84%	4.65%
14	1999	10.77%	5.87%	4.90%	5.03%	4.68%
15	2000	11.43%	5.94%	5.49%	5.19%	4.82%
16	2001	11.09%	5.49%	5.60%	5.37%	4.94%
17	2002	11.16%	5.43%	5.73%	5.56%	5.07%
18	2003	10.97%	4.96%	6.01%	5.55%	5.19%
19	2004	10.75%	5.05%	5.70%	5.71%	5.37%
20	2005	10.54%	4.65%	5.89%	5.79%	5.49%
21	2006	10.36%	4.99%	5.37%	5.74%	5.56%
22	2007	10.36%	4.83%	5.53%	5.70%	5.63%
23	2008	10.46%	4.28%	6.18%	5.73%	5.64%
24	2009	10.48%	4.07%	6.41%	5.88%	5.79%
25	2010	10.24%	4.25%	5.99%	5.89%	5.84%
26	2011	10.07%	3.91%	6.16%	6.05%	5.90%
27	2012	10.01%	2.92%	7.09%	6.37%	6.03%
28	2013	9.79%	3.45%	6.34%	6.40%	6.07%
29	2014	9.76%	3.34%	6.42%	6.40%	6.14%
30	2015	9.58%	2.84%	6.74%	6.55%	6.22%
31	2016 [3]	9.68%	2.72%	6.96%	6.71%	6.38%
32	**Average**	**11.17%**	**5.71%**	**5.46%**	**5.40%**	**5.40%**
33	**Minimum**				**4.25%**	**4.38%**
	Maximum				**6.71%**	**6.38%**

Sources:

[1] Regulatory Research Associates, Inc., Regulatory Focus, Major Rate Case Decisions, Calendar 2015. In 2010 forward, the Virginia cases, which are subject to an adjustment for certain generation assets up to 200 basis points, are excluded.

[2] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/. The yields from 2002 to 2005 represent the 20-Year Treasury yields obtained from the Federal Reserve Bank.

[3] The data includes the period Jan - Mar 2016.

Tucson Electric Power Company

Equity Risk Premium - Utility Bond

Line	Year	Authorized Electric Returns[1] (1)	Average "A" Rated Utility Bond Yield[2] (2)	Indicated Risk Premium (3)	Rolling 5 - Year Average (4)	Rolling 10 - Year Average (5)
1	1986	13.93%	9.58%	4.35%		
2	1987	12.99%	10.10%	2.89%		
3	1988	12.79%	10.49%	2.30%		
4	1989	12.97%	9.77%	3.20%		
5	1990	12.70%	9.86%	2.84%	3.12%	
6	1991	12.55%	9.36%	3.19%	2.88%	
7	1992	12.09%	8.69%	3.40%	2.99%	
8	1993	11.41%	7.59%	3.82%	3.29%	
9	1994	11.34%	8.31%	3.03%	3.26%	
10	1995	11.55%	7.89%	3.66%	3.42%	3.27%
11	1996	11.39%	7.75%	3.64%	3.51%	3.20%
12	1997	11.40%	7.60%	3.80%	3.59%	3.29%
13	1998	11.66%	7.04%	4.62%	3.75%	3.52%
14	1999	10.77%	7.62%	3.15%	3.77%	3.52%
15	2000	11.43%	8.24%	3.19%	3.68%	3.55%
16	2001	11.09%	7.76%	3.33%	3.62%	3.56%
17	2002	11.16%	7.37%	3.79%	3.61%	3.60%
18	2003	10.97%	6.58%	4.39%	3.57%	3.66%
19	2004	10.75%	6.16%	4.59%	3.86%	3.81%
20	2005	10.54%	5.65%	4.89%	4.20%	3.94%
21	2006	10.36%	6.07%	4.29%	4.39%	4.00%
22	2007	10.36%	6.07%	4.29%	4.49%	4.05%
23	2008	10.46%	6.53%	3.93%	4.40%	3.98%
24	2009	10.48%	6.04%	4.44%	4.37%	4.11%
25	2010	10.24%	5.46%	4.78%	4.35%	4.27%
26	2011	10.07%	5.04%	5.03%	4.49%	4.44%
27	2012	10.01%	4.13%	5.88%	4.81%	4.65%
28	2013	9.79%	4.48%	5.31%	5.09%	4.74%
29	2014	9.76%	4.28%	5.48%	5.30%	4.83%
30	2015	9.58%	4.12%	5.46%	5.43%	4.89%
31	2016 [3]	9.68%	4.18%	5.50%	5.53%	5.01%
32	**Average**	**11.17%**	**7.09%**	**4.08%**	**4.03%**	**4.00%**
33	**Minimum**				**2.88%**	**3.20%**
34	**Maximum**				**5.53%**	**5.01%**

Sources:

[1] Regulatory Research Associates, Inc., Regulatory Focus, Major Rate Case Decisions, Calendar 2015. In 2010 forward, the Virginia cases, which are subject to an adjustment for certain generation assets up to 200 basis points, are excluded.

[2] Mergent Public Utility Manual, Mergent Weekly News Reports, 2003. The utility yields for the period 2001-2009 were obtained from the Mergent Bond Record. The utility yields from 2010-2015 were obtained from http://credittrends.moodys.com/.

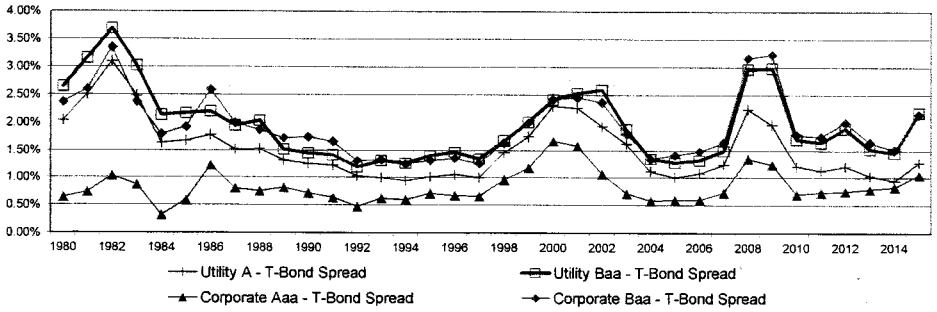
[3] The data includes the period Jan - Mar 2016.

Tucson Electric Power Company

Bond Yield Spreads

Line	Year	T-Bond Yield[1] (1)	Public Utility Bond A[2] (2)	Public Utility Bond Baa[2] (3)	Public Utility Bond A-T-Bond Spread (4)	Public Utility Bond Baa-T-Bond Spread (5)	Corporate Bond Aaa[1] (6)	Corporate Bond Baa[1] (7)	Corporate Bond Aaa-T-Bond Spread (8)	Corporate Bond Baa-T-Bond Spread (9)	Utility to Corporate Baa Spread (10)	Utility to Corporate A-Aaa Spread (11)
1	1980	11.30%	13.34%	13.95%	2.04%	2.65%	11.94%	13.67%	0.64%	2.37%	0.28%	1.40%
2	1981	13.44%	15.95%	16.60%	2.51%	3.16%	14.17%	16.04%	0.73%	2.60%	0.56%	1.78%
3	1982	12.76%	15.86%	16.45%	3.10%	3.69%	13.79%	16.11%	1.03%	3.35%	0.34%	2.07%
4	1983	11.18%	13.66%	14.20%	2.48%	3.02%	12.04%	13.55%	0.86%	2.38%	0.65%	1.62%
5	1984	12.39%	14.03%	14.53%	1.64%	2.14%	12.71%	14.19%	0.32%	1.80%	0.34%	1.32%
6	1985	10.79%	12.47%	12.96%	1.68%	2.17%	11.37%	12.72%	0.58%	1.93%	0.24%	1.10%
7	1986	7.80%	9.58%	10.00%	1.78%	2.20%	9.02%	10.39%	1.22%	2.59%	-0.39%	0.56%
8	1987	8.58%	10.10%	10.53%	1.52%	1.95%	9.38%	10.58%	0.80%	2.00%	-0.05%	0.72%
9	1988	8.96%	10.49%	11.00%	1.53%	2.04%	9.71%	10.83%	0.75%	1.87%	0.17%	0.78%
10	1989	8.45%	9.77%	9.97%	1.32%	1.52%	9.26%	10.18%	0.81%	1.73%	-0.21%	0.51%
11	1990	8.61%	9.86%	10.06%	1.25%	1.45%	9.32%	10.36%	0.71%	1.75%	-0.29%	0.54%
12	1991	8.14%	9.36%	9.55%	1.22%	1.41%	8.77%	9.80%	0.63%	1.67%	-0.25%	0.59%
13	1992	7.67%	8.69%	8.86%	1.02%	1.19%	8.14%	8.98%	0.47%	1.31%	-0.12%	0.55%
14	1993	6.60%	7.59%	7.91%	0.99%	1.31%	7.22%	7.93%	0.62%	1.33%	-0.02%	0.37%
15	1994	7.37%	8.31%	8.63%	0.94%	1.26%	7.96%	8.62%	0.59%	1.25%	0.01%	0.35%
16	1995	6.88%	7.89%	8.29%	1.01%	1.41%	7.59%	8.20%	0.71%	1.32%	0.09%	0.30%
17	1996	6.70%	7.75%	8.17%	1.05%	1.47%	7.37%	8.05%	0.67%	1.35%	0.12%	0.38%
18	1997	6.61%	7.60%	7.95%	0.99%	1.34%	7.26%	7.86%	0.66%	1.26%	0.09%	0.34%
19	1998	5.58%	7.04%	7.26%	1.46%	1.68%	6.53%	7.22%	0.95%	1.64%	0.04%	0.51%
20	1999	5.87%	7.62%	7.88%	1.75%	2.01%	7.04%	7.87%	1.18%	2.01%	0.01%	0.58%
21	2000	5.94%	8.24%	8.36%	2.30%	2.42%	7.62%	8.36%	1.68%	2.42%	-0.01%	0.62%
22	2001	5.49%	7.76%	8.03%	2.27%	2.54%	7.08%	7.95%	1.59%	2.45%	0.08%	0.68%
23	2002	5.43%	7.37%	8.02%	1.94%	2.59%	6.49%	7.80%	1.06%	2.37%	0.22%	0.88%
24	2003	4.96%	6.58%	6.84%	1.62%	1.89%	5.67%	6.77%	0.71%	1.81%	0.08%	0.91%
25	2004	5.05%	6.16%	6.40%	1.11%	1.35%	5.63%	6.39%	0.58%	1.35%	0.00%	0.53%
26	2005	4.65%	5.65%	5.93%	1.00%	1.28%	5.24%	6.06%	0.59%	1.42%	-0.14%	0.41%
27	2006	4.99%	6.07%	6.32%	1.08%	1.32%	5.59%	6.48%	0.60%	1.49%	-0.16%	0.48%
28	2007	4.83%	6.07%	6.33%	1.24%	1.50%	5.56%	6.48%	0.72%	1.65%	-0.15%	0.52%
29	2008	4.28%	6.53%	7.25%	2.25%	2.97%	5.63%	7.45%	1.35%	3.17%	-0.20%	0.90%
30	2009	4.07%	6.04%	7.06%	1.97%	2.99%	5.31%	7.30%	1.24%	3.23%	-0.24%	0.72%
31	2010	4.25%	5.46%	5.96%	1.21%	1.71%	4.94%	6.04%	0.69%	1.79%	-0.08%	0.52%
32	2011	3.91%	5.04%	5.56%	1.13%	1.65%	4.64%	5.66%	0.73%	1.75%	-0.10%	0.40%
33	2012	2.92%	4.13%	4.83%	1.21%	1.91%	3.67%	4.94%	0.75%	2.01%	-0.11%	0.46%
34	2013	3.45%	4.48%	4.98%	1.03%	1.53%	4.24%	5.10%	0.79%	1.65%	-0.12%	0.24%
35	2014	3.34%	4.28%	4.80%	0.94%	1.46%	4.16%	4.85%	0.82%	1.51%	-0.06%	0.11%
36	2015	2.84%	4.12%	5.03%	1.27%	2.19%	3.89%	5.00%	1.05%	2.16%	0.03%	0.23%
37	2016[3]	2.72%	4.18%	5.30%	1.46%	2.58%	3.93%	5.31%	1.21%	2.59%	-0.01%	0.25%
37	**Average**	**6.72%**	**8.25%**	**8.70%**	**1.52%**	**1.97%**	**7.56%**	**8.68%**	**0.84%**	**1.95%**	**0.02%**	**0.68%**

Yield Spreads
Treasury Vs. Corporate & Treasury Vs. Utility



Sources:

[1] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/.

[2] Mergent Public Utility Manual, Mergent Weekly News Reports, 2003. The utility yields for the period 2001-2009 were obtained from the Mergent Bond Record. The utility yields from 2010-2015 were obtained from http://credittrends.moodys.com/.

[3] The data includes the period Jan - Mar 2016.

Tucson Electric Power Company

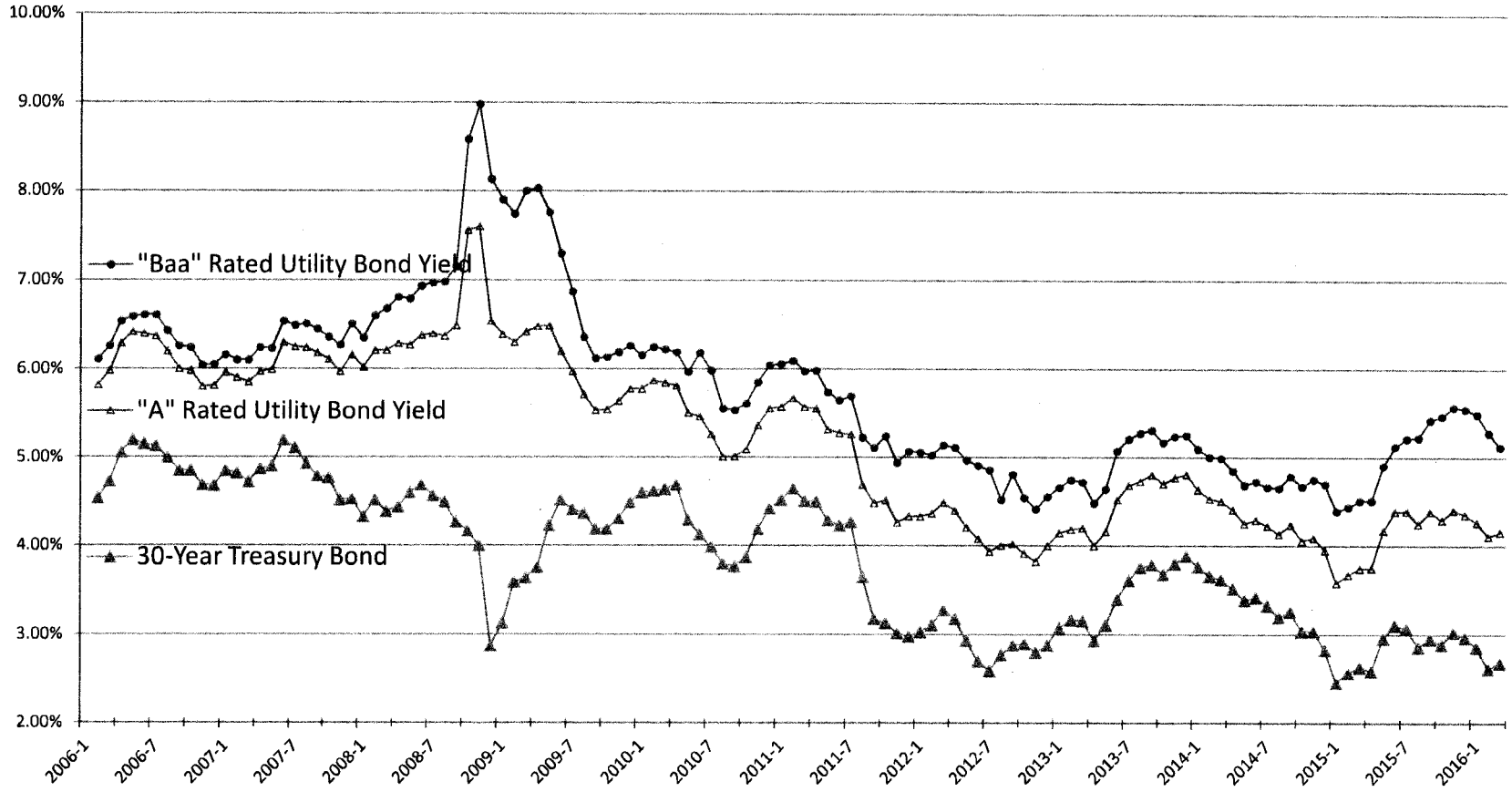
Treasury and Utility Bond Yields

Line	Date	Treasury Bond Yield[1] (1)	"A" Rated Utility Bond Yield[2] (2)	"Baa" Rated Utility Bond Yield[2] (3)
1	05/13/16	2.55%	3.85%	4.51%
2	05/06/16	2.62%	3.93%	4.58%
3	04/29/16	2.66%	3.99%	4.66%
4	04/22/16	2.70%	4.05%	4.74%
5	04/15/16	2.56%	3.94%	4.70%
6	04/08/16	2.55%	3.96%	4.74%
7	04/01/16	2.62%	4.04%	4.87%
8	03/24/16	2.67%	4.11%	4.98%
9	03/18/16	2.68%	4.15%	5.05%
10	03/11/16	2.75%	4.23%	5.22%
11	03/04/16	2.70%	4.20%	5.28%
12	02/26/16	2.63%	4.15%	5.25%
13	02/19/16	2.61%	4.10%	5.26%
14	**Average**	**2.64%**	**4.05%**	**4.91%**
15	**Spread To Treasury**		**1.41%**	**2.27%**

Sources:
[1] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org.
[2] http://credittrends.moodys.com/.

Tucson Electric Power Company

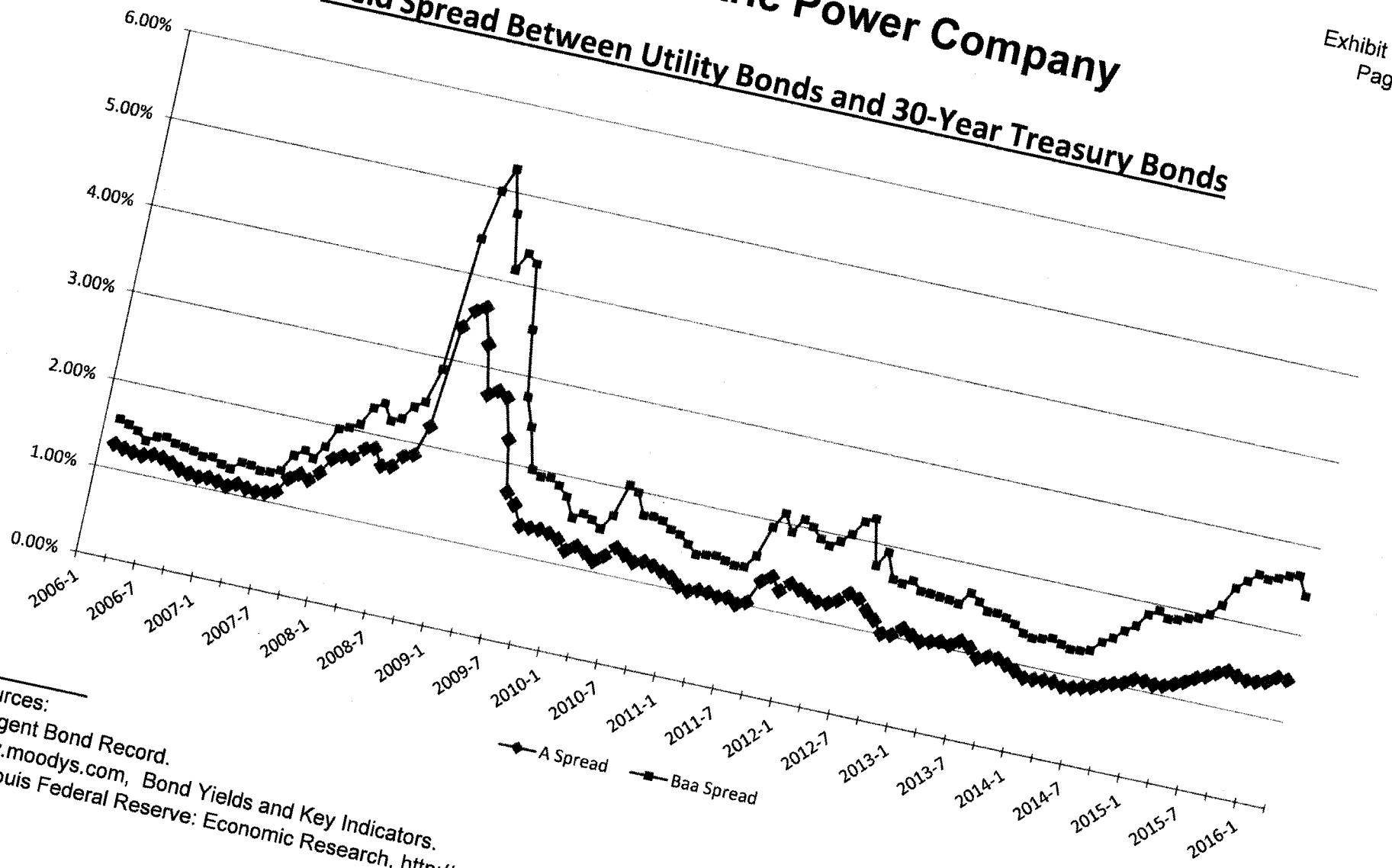
Trends in Bond Yields



Sources:
Mergent Bond Record.
www.moodys.com, Bond Yields and Key Indicators.
St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/

Tucson Electric Power Company

Yield Spread Between Utility Bonds and 30-Year Treasury Bonds



Sources:
Mergent Bond Record.
www.moodys.com, Bond Yields and Key Indicators.
St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/

Tucson Electric Power Company

Value Line Beta

Line	Company	Beta
1	ALLETE, Inc.	0.80
2	Alliant Energy Corporation	0.80
3	Ameren Corporation	0.75
4	American Electric Power Company, Inc.	0.70
5	Avista Corporation	0.75
6	CenterPoint Energy, Inc.	0.85
7	CMS Energy Corporation	0.75
8	Consolidated Edison, Inc.	0.55
9	DTE Energy Company	0.75
10	El Paso Electric Company	0.75
11	Entergy Corporation	0.70
12	Eversource Energy	0.75
13	FirstEnergy Corp.	0.65
14	Great Plains Energy Inc.	0.80
15	IDACORP, Inc.	0.80
16	NorthWestern Corporation	0.70
17	OGE Energy Corp.	0.95
18	PG&E Corporation	0.70
19	Pinnacle West Capital Corporation	0.75
20	PNM Resources, Inc.	0.80
21	Portland General Electric Company	0.80
22	PPL Corporation	0.70
23	Public Service Enterprise Group Incorporated	0.75
24	SCANA Corporation	0.75
25	Sempra Energy	0.85
26	Vectren Corporation	0.80
27	WEC Energy Group, Inc.	0.70
28	Westar Energy, Inc.	0.75
29	Xcel Energy Inc.	0.65
30	**Average**	**0.75**

Source:
The Value Line Investment Survey,
February 19, March 18, and April 29, 2016.

Tucson Electric Power Company

CAPM Return

Line	Description	High Market Risk Premium (1)	Low Market Risk Premium (2)
1	Risk-Free Rate[1]	3.50%	3.50%
2	Risk Premium[2]	7.90%	6.00%
3	Beta[3]	0.75	0.75
4	**CAPM**	**9.44%**	**8.01%**

Sources:

[1] Blue Chip Financial Forecasts; May 1, 2016, at 2.

[2] Morningstar, Inc. Ibbotson SBBI 2015 Classic Yearbook at 91 and 152.

[3] Exhibit MPG-16.

Tucson Electric Power Company

Standard & Poor's Credit Metrics

Line	Description	Retail Cost of Service Amount ($000) (1)	S&P Benchmark (Medial Volatility)[1/2] Intermediate (2)	Significant (3)	Aggressive (4)	Reference (5)
1	Rate Base	$ 2,104,678				Schedule B-2 and G-2.
2	Weighted Common Return	4.53%				Page 2, Line 2, Col. 4.
3	Pre-Tax Rate of Return	9.56%				Page 2, Line 3, Col. 5.
4	Income to Common	$ 95,308				Line 1 x Line 2.
5	EBIT	$ 201,268				Line 1 x Line 3.
6	Depreciation & Amortization	$ 129,703				Schedule G-2
7	Imputed Amortization	$ 1,035				S&P Credit Portal, downloaded on May 25, 2016.
8	Deferred Income Taxes & ITC	$ (58,309)				Schedule B-2 and G-2.
9	Funds from Operations (FFO)	$ 167,737				Sum of Line 4 and Lines 6 through 8.
10	Imputed Interest Expense	$ 667				S&P Credit Portal, downloaded on May 25, 2016.
11	EBITDA	$ 332,673				Sum of Lines 5 through 7 and Line 10.
12	Total Debt Ratio	51%				Page 3, Line 3, Col. 2.
13	Debt to EBITDA	3.3x	2.5x - 3.5x	3.5x - 4.5x	4.5x - 5.5x	(Line 1 x Line 12) / Line 11.
14	FFO to Total Debt	15%	23% - 35%	13% - 23%	9% - 13%	Line 9 / (Line 1 x Line 12).

Sources:

[1] Standard & Poor's RatingsDirect: "Criteria: Corporate Methodology," November 19, 2013.

[2] Standard & Poor's RatingsDirect: "Research Update: Tucson Electric Power Co. Outlook Revised To Negative, Ratings Affirmed On Parent's Planned Acquisition," February 10, 2016.

Note:

Based on the February 2016 S&P report, TEP has a "Strong" business risk profile and a "Significant" financial risk profile, and falls under the "Medial Volatility" matrix.

Tucson Electric Power Company

Standard & Poor's Credit Metrics
(Pre-Tax Rate of Return)

Line	Description	Amount (000) (1)	Weight (2)	Cost (3)	Weighted Cost (4)	Pre-Tax Weighted Cost (5)
1	Long-Term Debt	$ 1,521,156	51.31%	4.32%	2.22%	2.22%
2	Common Equity	1,443,610	48.69%	**9.30%**	4.53%	7.35%
3	**Total**	**$ 2,964,766**	**100.00%**		**6.74%**	**9.56%**
4	Tax Conversion Factor*					1.6223

Sources:
Exhibit MPG-2.
* Schedule A-1.

Tucson Electric Power Company

Standard & Poor's Credit Metrics
(Financial Capital Structure)

Line	Description	Amount (000) (1)	Weight (2)
1	Long-Term Debt	$ 1,521,156	51.15%
2	Operating Leases*	8,857	0.30%
3	**Total Debt**	**$ 1,530,013**	51.45%
4	Common Equity	$ 1,443,610	48.55%
5	**Total**	**$ 2,973,623**	**100.00%**

Source:
* S&P Credit Portal, downloaded on May 25, 2016.
Includes 78.5% of the total company operating leases based on the rate base allocator.

Tucson Electric Power Company

S&P CreditStats

Line		Credit Rating (1)	FFO / Debt (%) (2)	Debt / Capital (%) (3)
	Value Line Publicly Traded Electric Utility Companies			
	A Rated			
1	Average	A-	25.17	55.50
2	Median	A-	26.02	54.03
	BBB Rated			
3	Average	BBB	21.30	56.64
4	Median	BBB	21.72	56.75
	All Utilities			
5	Average	BBB+	22.62	56.25
6	Median	BBB+	23.89	56.14
	Electric Operating Subsidiary Companies			
	A Rated			
7	Average	A-	20.74	51.52
8	Median	A-	19.54	52.00
	BBB Rated			
9	Average	BBB	20.46	54.25
10	Median	BBB	18.03	54.13
	All Utilities			
11	Average	BBB+	20.59	52.92
12	Median	BBB+	19.01	53.47

Source:
www.globalcreditportal.com/ratingsdirect/
Downloaded May 31, 2016.

Tucson Electric Power Company

Bulkley Revised 30-Day Multi-Stage DCF
Average First Stage Growth Rate

Line	Company	Stock Price[1] (1)	Annualized Dividend[1] (2)	First Stage Growth[1] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[2] (9)	ROE (10)
1	ALLETE, Inc.	$47.54	$2.02	6.25%	5.91%	5.57%	5.23%	4.88%	4.54%	4.20%	9.44%
2	American Electric Power Company, Inc.	$54.84	$2.12	4.97%	4.84%	4.71%	4.59%	4.46%	4.33%	4.20%	8.60%
3	Duke Energy Corporation	$72.86	$3.18	4.78%	4.68%	4.59%	4.49%	4.39%	4.30%	4.20%	9.12%
4	Empire District Electric Company	$22.30	$1.04	4.33%	4.31%	4.29%	4.27%	4.24%	4.22%	4.20%	9.32%
5	Eversource Energy	$47.07	$1.67	7.22%	6.72%	6.21%	5.71%	5.21%	4.70%	4.20%	8.84%
6	Great Plains Energy Inc.	$25.06	$0.98	5.79%	5.53%	5.26%	5.00%	4.73%	4.47%	4.20%	8.89%
7	IDACORP, Inc.	$58.15	$1.88	3.00%	3.20%	3.40%	3.60%	3.80%	4.00%	4.20%	7.42%
8	Otter Tail Corporation	$26.71	$1.23	7.50%	6.95%	6.40%	5.85%	5.30%	4.75%	4.20%	10.33%
9	Pinnacle West Capital Corporation	$59.37	$2.38	4.63%	4.56%	4.49%	4.42%	4.34%	4.27%	4.20%	8.67%
10	PNM Resources, Inc.	$25.48	$0.80	8.52%	7.80%	7.08%	6.36%	5.64%	4.92%	4.20%	8.65%
11	Portland General Electric Company	$34.21	$1.20	5.32%	5.13%	4.95%	4.76%	4.57%	4.39%	4.20%	8.27%
12	Westar Energy, Inc.	$35.72	$1.44	4.30%	4.28%	4.27%	4.25%	4.23%	4.22%	4.20%	8.60%
13	**Average**	**$42.44**	**$1.66**	**5.55%**	**5.33%**	**5.10%**	**4.88%**	**4.65%**	**4.43%**	**4.20%**	**8.84%**
14	**Median**										**8.76%**

Sources:
[1] Exhibit AEB-2, page 1.
[2] Blue Chip Economic Indicators, March 10, 2016 at 14.

Tucson Electric Power Company

Bulkley Revised 90-Day Multi-Stage DCF
Average First Stage Growth Rate

Line	Company	Stock Price[1] (1)	Annualized Dividend[1] (2)	First Stage Growth[1] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[2] (9)	ROE (10)
1	ALLETE, Inc.	$49.34	$2.02	6.25%	5.91%	5.57%	5.23%	4.88%	4.54%	4.20%	9.25%
2	American Electric Power Company, Inc.	$55.40	$2.12	4.97%	4.84%	4.71%	4.59%	4.46%	4.33%	4.20%	8.55%
3	Duke Energy Corporation	$75.02	$3.18	4.78%	4.68%	4.59%	4.49%	4.39%	4.30%	4.20%	8.97%
4	Empire District Electric Company	$23.28	$1.04	4.33%	4.31%	4.29%	4.27%	4.24%	4.22%	4.20%	9.09%
5	Eversource Energy	$48.34	$1.67	7.22%	6.72%	6.21%	5.71%	5.21%	4.70%	4.20%	8.72%
6	Great Plains Energy Inc.	$25.73	$0.98	5.79%	5.53%	5.26%	5.00%	4.73%	4.47%	4.20%	8.76%
7	IDACORP, Inc.	$59.46	$1.88	3.00%	3.20%	3.40%	3.60%	3.80%	4.00%	4.20%	7.34%
8	Otter Tail Corporation	$28.39	$1.23	7.50%	6.95%	6.40%	5.85%	5.30%	4.75%	4.20%	9.97%
9	Pinnacle West Capital Corporation	$60.43	$2.38	4.63%	4.56%	4.49%	4.42%	4.34%	4.27%	4.20%	8.59%
10	PNM Resources, Inc.	$26.58	$0.80	8.52%	7.80%	7.08%	6.36%	5.64%	4.92%	4.20%	8.47%
11	Portland General Electric Company	$35.00	$1.20	5.32%	5.13%	4.95%	4.76%	4.57%	4.39%	4.20%	8.18%
12	Westar Energy, Inc.	$36.55	$1.44	4.30%	4.28%	4.27%	4.25%	4.23%	4.22%	4.20%	8.50%
13	**Average**	**$43.63**	**$1.66**	**5.55%**	**5.33%**	**5.10%**	**4.88%**	**4.65%**	**4.43%**	**4.20%**	**8.70%**
14	**Median**										**8.65%**

Sources:
[1] Exhibit AEB-2, page 2.
[2] Blue Chip Economic Indicators, March 10, 2016 at 14.

Tucson Electric Power Company

Bulkley Revised 180-Day Multi-Stage DCF
Average First Stage Growth Rate

Line	Company	Stock Price[1] (1)	Annualized Dividend[1] (2)	First Stage Growth[1] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[2] (9)	ROE (10)
1	ALLETE, Inc.	$51.76	$2.02	6.25%	5.91%	5.57%	5.23%	4.88%	4.54%	4.20%	9.01%
2	American Electric Power Company, Inc.	$57.32	$2.12	4.97%	4.84%	4.71%	4.59%	4.46%	4.33%	4.20%	8.40%
3	Duke Energy Corporation	$78.37	$3.18	4.78%	4.68%	4.59%	4.49%	4.39%	4.30%	4.20%	8.77%
4	Empire District Electric Company	$25.56	$1.04	4.33%	4.31%	4.29%	4.27%	4.24%	4.22%	4.20%	8.65%
5	Eversource Energy	$50.34	$1.67	7.22%	6.72%	6.21%	5.71%	5.21%	4.70%	4.20%	8.54%
6	Great Plains Energy Inc.	$26.61	$0.98	5.79%	5.53%	5.26%	5.00%	4.73%	4.47%	4.20%	8.61%
7	IDACORP, Inc.	$61.81	$1.88	3.00%	3.20%	3.40%	3.60%	3.80%	4.00%	4.20%	7.22%
8	Otter Tail Corporation	$29.73	$1.23	7.50%	6.95%	6.40%	5.85%	5.30%	4.75%	4.20%	9.71%
9	Pinnacle West Capital Corporation	$63.37	$2.38	4.63%	4.56%	4.49%	4.42%	4.34%	4.27%	4.20%	8.38%
10	PNM Resources, Inc.	$27.87	$0.80	8.52%	7.80%	7.08%	6.36%	5.64%	4.92%	4.20%	8.27%
11	Portland General Electric Company	$36.33	$1.20	5.32%	5.13%	4.95%	4.76%	4.57%	4.39%	4.20%	8.03%
12	Westar Energy, Inc.	$38.34	$1.44	4.30%	4.28%	4.27%	4.25%	4.23%	4.22%	4.20%	8.29%
13	**Average**	**$45.62**	**$1.66**	**5.55%**	**5.33%**	**5.10%**	**4.88%**	**4.65%**	**4.43%**	**4.20%**	**8.49%**
14	**Median**										**8.47%**

Sources:
[1] Exhibit AEB-2, page 3.
[2] Blue Chip Economic Indicators, March 10, 2016 at 14.

Tucson Electric Power Company

Accuracy of Interest Rate Forecasts

(Long-Term Treasury Bond Yields - Projected Vs. Actual)

Line	Date	Publication Data: Prior Quarter Actual Yield (1)	Publication Data: Projected Yield (2)	Publication Data: Projected Quarter (3)	Actual Yield in Projected Quarter (4)	Projected Yield Higher (Lower) Than Actual Yield* (5)
1	Dec-00	5.8%	5.8%	1Q, 02	5.6%	0.2%
2	Mar-01	5.7%	5.6%	2Q, 02	5.8%	-0.2%
3	Jun-01	5.4%	5.8%	3Q, 02	5.2%	0.6%
4	Sep-01	5.7%	5.9%	4Q, 02	5.1%	0.8%
5	Dec-01	5.5%	5.7%	1Q, 03	5.0%	0.7%
6	Mar-02	5.3%	5.9%	2Q, 03	4.7%	1.2%
7	Jun-02	5.6%	6.2%	3Q, 03	5.2%	1.0%
8	Sep-02	5.8%	5.9%	4Q, 03	5.2%	0.7%
9	Dec-02	5.2%	5.7%	1Q, 04	4.9%	0.8%
10	Mar-03	5.1%	5.7%	2Q, 04	5.4%	0.3%
11	Jun-03	5.0%	5.4%	3Q, 04	5.1%	0.3%
12	Sep-03	4.7%	5.8%	4Q, 04	4.9%	0.9%
13	Dec-03	5.2%	5.9%	1Q, 05	4.8%	1.1%
14	Mar-04	5.2%	5.9%	2Q, 05	4.6%	1.4%
15	Jun-04	4.9%	6.2%	3Q, 05	4.5%	1.7%
16	Sep-04	5.4%	6.0%	4Q, 05	4.8%	1.2%
17	Dec-04	5.1%	5.8%	1Q, 06	4.6%	1.2%
18	Mar-05	4.9%	5.6%	2Q, 06	5.1%	0.5%
19	Jun-05	4.8%	5.5%	3Q, 06	5.0%	0.5%
20	Sep-05	4.6%	5.2%	4Q, 06	4.7%	0.5%
21	Dec-05	4.5%	5.3%	1Q, 07	4.8%	0.5%
22	Mar-06	4.8%	5.1%	2Q, 07	5.0%	0.1%
23	Jun-06	4.6%	5.3%	3Q, 07	4.9%	0.4%
24	Sep-06	5.1%	5.2%	4Q, 07	4.6%	0.6%
25	Dec-06	5.0%	5.0%	1Q, 08	4.4%	0.6%
26	Mar-07	4.7%	5.1%	2Q, 08	4.6%	0.5%
27	Jun-07	4.8%	5.1%	3Q, 08	4.5%	0.7%
28	Sep-07	5.0%	5.2%	4Q, 08	3.7%	1.5%
29	Dec-07	4.9%	4.8%	1Q, 09	3.5%	1.4%
30	Mar-08	4.6%	4.8%	2Q, 09	4.0%	0.8%
31	Jun-08	4.4%	4.9%	3Q, 09	4.3%	0.6%
32	Sep-08	4.6%	5.1%	4Q, 09	4.3%	0.8%
33	Dec-08	4.5%	4.6%	1Q, 10	4.6%	0.0%
34	Mar-09	3.7%	4.1%	2Q, 10	4.4%	-0.3%
35	Jun-09	3.5%	4.6%	3Q, 10	3.9%	0.8%
36	Sep-09	4.0%	5.0%	4Q, 10	4.2%	0.8%
37	Dec-09	4.3%	5.0%	1Q, 11	4.6%	0.4%
38	Mar-10	4.3%	5.2%	2Q, 11	4.3%	0.9%
39	Jun-10	4.6%	5.2%	3Q, 11	3.7%	1.5%
40	Sep-10	4.4%	4.7%	4Q, 11	3.0%	1.7%
41	Dec-10	3.9%	4.6%	1Q, 12	3.1%	1.5%
42	Mar-11	4.2%	5.1%	2Q, 12	2.9%	2.2%
43	Jun-11	4.6%	5.2%	3Q, 12	2.8%	2.5%
44	Sep-11	4.3%	4.2%	4Q, 12	2.9%	1.3%
45	Dec-11	3.7%	3.8%	1Q, 13	3.1%	0.7%
46	Mar-12	3.0%	3.8%	2Q, 13	3.2%	0.7%
47	Jun-12	3.1%	3.7%	3Q, 13	3.7%	0.0%
48	Sep-12	2.9%	3.4%	4Q, 13	3.8%	-0.4%
49	Dec-12	2.8%	3.4%	1Q, 14	3.7%	-0.3%
50	Mar-13	2.9%	3.6%	2Q, 14	3.4%	0.2%
51	Jun-13	3.1%	3.7%	3Q, 14	3.3%	0.4%
52	Sep-13	3.2%	4.2%	4Q, 14	3.0%	1.2%
53	Dec-13	3.7%	4.2%	1Q, 15	2.6%	1.7%
54	Mar-14	3.8%	4.4%	2Q 15	2.9%	1.5%
55	Jun-14	3.7%	4.3%	3Q 15	2.8%	1.5%
56	Sep-14	3.4%	4.3%	4Q 15	3.0%	1.3%
57	Dec-14	3.3%	4.0%	1Q 16	2.7%	1.3%
58	Jan-15	3.0%	4.0%	2Q 16		
59	Feb-15	3.0%	3.7%	2Q 16		
60	Mar-15	3.0%	3.7%	2Q 16		
61	Apr-15	2.6%	3.7%	3Q 16		
62	May-15	2.6%	3.7%	3Q 16		
63	Jun-15	2.6%	3.7%	3Q 16		
64	Jul-15	2.7%	4.0%	4Q 16		
65	Aug-15	2.9%	3.9%	4Q 16		
66	Sep-15	2.9%	3.8%	4Q 16		
67	Oct-15	2.8%	3.9%	1Q 17		
68	Nov-15	2.8%	3.8%	1Q 17		
69	Dec-15	2.8%	3.7%	1Q 17		
70	Jan-15	3.0%	3.8%	2Q 17		
71	Feb-16	3.0%	3.7%	2Q 17		
72	Mar-16	3.0%	3.5%	2Q 17		
73	Apr-16	2.7%	3.6%	3Q 17		
74	May-16	2.7%	3.5%	3Q 17		

Source:
Blue Chip Financial Forecasts, Various Dates.
* Col. 2 - Col. 4.

Tucson Electric Power Company

Fair Value Rate Base & Rate of Return

Line	Capital	$ Millions	Percent	Weighted FVRB
1	OCRB	$ 2,104.7	50.00%	$ 1,052.4
2	RCND	$ 3,721.9	50.00%	$ 1,861.0
3	FVRB			**$ 2,913.3**

	Capital	$ Millions	Percent	Cost Rate	Weighted Cost Rate
4	Long-Term Debt	$ 1,079.9	37.07%	4.32%	1.60%
5	Common Equity	$ 1,024.8	35.18%	**9.30%**	3.27%
6	Fair Value Increment	$ 808.6	27.76%	**0.46%**	0.13%
7	Total	$ 2,913.3			**5.00%**

Tucson Electric Power Company

Development of the Fair Value Cost Rate

Line	As Filed by Ms. Bulkley[1]		Corrected	
	Step 1		**Step 1**	
	Consumer Price Index		**Consumer Price Index[2]**	
1	2017-2021	2.30%	2018-2022	2.30%
2	2022-2026	2.30%	2023-2027	2.30%
3	Average	2.30%	Average	2.30%
	Consumer Price Index (All-Urban)		**Consumer Price Index (All-Urban)[3]**	
4	2015	2.37	2016	2.392
5	2026	2.94	2027	3.123
6	Compound Annual Growth Rate	1.98%	Compound Annual Growth Rate	2.46%
	GDP Chain-type Price Index		**GDP Chain-type Price Index[3]**	
7	2015	1.11	2016	1.119
8	2026	1.34	2027	1.398
9	Compound Annual Growth Rate	1.74%	Compound Annual Growth Rate	2.05%
			Market-Based Breakeven Inflation	
10			13-Week Average Nominal Yield[4]	2.64%
11			13-Week Average TIPS Yield[5]	0.92%
12			Breakeven Inflation[6]	1.70%
13	**Average Inflation Forecast**	**2.01%**	**Average Inflation Forecast**	**2.13%**
	Step 2		**Step 2**	
	Nominal U.S. Treasury Bond Yield, 30-Year		**Nominal U.S. Treasury Bond Yield, 30-Year**	
14	2017-2021	4.80%	Current 13-Week Average[4]	2.64%
15	2022-2026	5.00%	3Q 2017[7]	3.50%
16	Average	4.90%	Average	3.07%
17	Implied Real Risk Free Rate	2.84%	Implied Real Risk Free Rate[8]	0.92%
18			13-Week Average 30-Year TIPS Yield[5]	0.92%
19			Average Real Risk Free Rate	0.92%
20	50.0% of Real Risk Free Rate	1.42%	**50.0% of Real Risk Free Rate**	**0.46%**

Sources & Notes:

[1] Exhibit AEB-10, page 2.

[2] *Blue Chip Economic Indicators* , March 10, 2016, page 14.

[3] EIA, *Annual Energy Outlook 2016: Early Release* , Table 20.

[4] Exhibit MPG-15, page 1.

[5] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org.

[6] (1+2.64%) / (1+0.92%) - 1.

[7] *Blue Chip Financial Forecasts* , May 1, 2016, page 2.

[8] (1+3.07%) / (1+2.13%) - 1.

Tucson Electric Power Company

13-Week Average 30-Year TIPS Yield

Line	Date	Yield
1	5/13/2016	0.79%
2	5/6/2016	0.86%
3	4/29/2016	0.82%
4	4/22/2016	0.92%
5	4/15/2016	0.84%
6	4/8/2016	0.81%
7	4/1/2016	0.83%
8	3/24/2016	0.95%
9	3/18/2016	0.94%
10	3/11/2016	1.09%
11	3/4/2016	1.02%
12	2/26/2016	1.04%
13	2/19/2016	1.11%
14	Average	**0.92%**